

The

Research Quarterly

of the

American Physical Education Association

Vol II

MARCH, 1931

No. 1

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in Colleges: Proceedings of the
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Published March, May, October and December

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Published March, May, October and December
Elmer D. Mitchell, Editor

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President's Address

The Changing Conception of College Physical Education

PROFESSOR WM. R. LAPORTE

University of Southern California

THE question is being raised repeatedly today by educators, "When will your physical education program be organized on a basis both educationally and scientifically sound?" The program for many years has been subject to much criticism, particularly from the standpoint of its curriculum content, its organization and its grading or lack of grading. Educators are accordingly frankly skeptical not as to what it might contribute, but as to what it is contributing. They are also definitely uncertain or uninformed as to just what it *should* contribute to the education of the child. The objectives of the physical education program, as stated by various leaders at different times, have ranged so widely and so inclusively, that everything good seemed to have been included. This has left the educator at a loss to know how much to believe of the claims made for physical education. Recent developments in educational research have established certain objective criteria that call physical education to a show down. General phraseology and haphazard methods will no longer suffice. Hence, we note a rapidly changing conception of the place of physical education in the general education field.

At one time physical education was specific and stereotyped. It was one system or it was another. It was exactly right or it was wrong. Nomenclature and method ruled supreme. Later physical education began to undergo a metamorphosis. Skepticism and doubt assailed the ranks of the believers. Perhaps the *system* really was not quite so important as the *child* himself; and yet no one knew just what to believe or what to stress. The certainty of an accepted and undoubted system gave way to the uncertainties of an eclectic, adapted or relative program. As the child's simple religion gives way some times to skepticism and doubt, so have our primitive stereotyped systems given place to a variable and adjustable program of almost chameleon-like nature. Of necessity, disagreements as to objectives, organization, technique and actual values of activities have resulted in a wide variety of programs all masquerading under the heading "physical education." In some cases, these programs have been limited in scope and intensive in nature. In others, they have been almost unlimited in scope and have given a shot gun exposure.

In some cases, the programs have been directed by trained leaders, in others by leaders with no professional preparation. Standards were no doubt better established and maintained under the old "system" program than under the new plan.

In spite of a highly improved overhead organization and supervision as represented in state, county and city departments of physical education, we still lack uniformity in objectives, curriculum content, organization, technique and achievement standards. In a very real sense, physical education faces greater problems and greater opportunities in the next decade than in all of its past history. This is due largely to the present unsettled conditions in educational circles; to the fact that a large percentage of physical education leaders are thinking constructively; and to the fact that educators in general are gradually awakening to a keener appreciation of the possibilities in the physical education field. The possibilities of this challenge can be realized, however, only by a very definite, concerted program of constructive research and study on the part of the various organizations and institutions concerned with the welfare of physical education.

We might well consider physical education today to be in its adolescent period, undergoing tremendous upheavals and adjustments, difficult to understand and impossible to prevent. If we look back over its early childhood, we find many prominent elements that are somewhat embarrassing to us now. One of the typical conceptions credited physical education with being a panacea for all ills. It was assumed that if you were sick, exercise would make you well; if you were fat, exercise would make you thin; and if you were thin, exercise would make you fat. "Exercise for health" became the slogan of so-called "physical culture" leaders. Such a slogan naturally led to sharp conflicts with the medical profession. Since adolescent physical education has fallen heir to both the good and the bad reputations of its childhood days, it is still struggling to free itself from the undesirable results of such assumptions. It is difficult to get medical men today to believe that physical educators are attempting to confine their efforts to the educational field and not to the therapy field. It is equally difficult to get the general public and many educators to believe that physical education has any contribution to make other than "exercise for health's sake." The possibilities in the broader educational values still need to be sold to the majority of educators and to the public in general.

Among the later developments, came the play and athletic movements in which emphasis was shifted from "exercise for health's sake" to "play for its recreational values." The educational values also became increasingly prominent as the athletic movement developed. Although interschool athletics started more or less spontane-

ously in student groups in secondary schools and colleges, they soon developed to such proportions that educational administrators were forced in self defense to take over responsibility for their promotion. Today, as a result, athletics of the interschool and intramural type constitute significant and valuable divisions of physical education in the more progressive institutions.

The war, with its demoralizing and devastating influences, made at least one valuable contribution to physical education. It called sharply to the attention of the American public, the fact that her young men were unfit for war. Educators were forced to conclude that unfitness for war meant unfitness for peace. There followed a sudden demand for a more comprehensive program of corrective and developmental activities such as would insure a higher degree of physical, mental and social fitness. Along with this came the demand for a better diagnosis and closer supervision of the health of the student in school.

These various factors did much to establish a greater appreciation for the educational and recreational values of physical activities. Perhaps the greatest factor, however, in determining the newer trend in physical education was the development of the educational philosophy represented by Dewey, Kilpatrick and others. Here, the child is considered as a citizen in action, being fitted by activity for a better and more intelligent activity later. It is assumed that within the limits of his hereditary endowment, the child will become a product of his composite experiences or activities; that his educational development is modified by every influence and every activity in which he participates; that the concomitant or attendant learnings are some times more important than the immediate objectives in a given educational situation; and that if we would have the child become a good citizen for tomorrow, we must let him act today in such manner as to insure present good citizenship.

Such a conception of education has revolutionized the possibilities in physical education. It places a tremendous responsibility on the individual charged with the direction of physical activities which involve intensive social contact under strong emotional tension and which deal with fundamentally interesting, instinctive reactions. It suggests that a properly organized physical education program under the right kind of leadership can verily *recreate* the young citizen of tomorrow. The objective of such a program should be to provide social-physical activity situations in which the child will have opportunity to act naturally and spontaneously in stimulating activities under conditions which are physically, morally and socially sound, safe and satisfying. *Leadership* means everything in situations as dynamic as the ones mentioned. The recipe for developing ideal citizens for the next generation is to provide ideal heroes and heroines

as the leaders and supervisors of the socialized physical activities in our educational institutions.

The newer conception of physical education considers it not as a *subject* but as a *field* of education, a division of a larger field which includes all of education. It might be thought of as a *method* of education, developing the individual through the medium of physical activities with the emphasis placed not on physical alone, but on a fine coordination of physical, mental, social and moral traits. The individual must be considered as a unified whole, gaining impressions through a variety of media and giving expressions through similar varied avenues closely coordinating the mental and physical.

The ultimate aim of physical education may well be to develop and train the individual so that he will realize his maximum capacities both physically and mentally, and will learn to use his powers intelligently and cooperatively under the most violent emotional stress. The functioning of body and mind should constitute a "divine symphony." Clashing and jarring should be eliminated in the ideal product of a perfected educational program. To a ship's engineer the clanging of the big engines is beautiful music. To the highly trained musician, a beautiful symphony is satisfying. To the educator a fine adjustment between mental and physical traits is equally inspiring. Inadequacies of either mental or physical type should be as jarring to him as would an instrument out of tune be to the musician.

There is the ever present danger that this fine synchronizing of the mental and physical may be lost sight of in our keen enthusiasm over so called "big muscle" activities. The undoubted organic and physical contribution of such activities is likely to over-impress us. Knowledge and skill in the activities involving large muscles alone could not constitute a comprehensive program of physical education any more than could the knowledge of gross anatomy make a good surgeon. Our physical education program at the present is weak in that it fails to include a sufficiently broad selection of activities to insure well rounded development.

Physical education as a medium of education is like a sharp two edged sword. It cuts deeply in whatever direction it is swung. Hence it is exceedingly important that the leadership be of the very best. No less an authority than Dr. Starbuck has stated that he has demonstrated through experimental research that "character is based on muscles and emotions." *If we determine the variety and nature of the muscular activity experiences as modified by emotional experiences, we hold the key to human character.*

SUMMARY

In attempting to summarize the changing conception of physical education, the following fifteen points will be of interest:

1. Physical education is no longer considered as a trailer or addendum to education, but as an integral part of education.
2. It no longer is a subject *in* education, but a field *of* education.
3. It is no longer an educational *child*, but an adolescent *youth*.
4. It is not a "system," but a definite method of education through muscular and emotional experience.
5. It is not a "panacea for ills," but a combination of specific media for securing varied results.
6. It is not a mischief-preventive, but a stimulating form of leisure time expression.
7. It is not an energy-release mechanism, but a developer of character and moral traits.
8. It is not merely an exercise medium, but a method of developing poise and power of self-expression.
9. It is not a promoter of military precision, but a developer of intelligent leadership.
10. It is not a health insurance, but is a valuable aid to health.
11. It is not a mere physical developer, but a promoter of fine adjustment between physical and mental.
12. It is not merely an athletic battle of brawn, but a test of wits in physical-social competition.
13. It is not a stimulant to emotional frenzy or explosion, but to the development of emotional stability under pressure.
14. It is not a menace to life and limb, but a developer of safety skills.
15. It is not merely a preparation for adulthood, but a training for good citizenship *now*.

The college physical education program is intimately related to the entire physical education program, because it naturally has the same general objectives, and its curriculum set-up must be based on the offerings in the lower grades. It, of course, deals with a limited and more or less highly selected group of individuals representing a small percentage of society. Most of these are to be prepared for professional and business life and hence will have need of adjustment to sedentary living. It may be questioned whether a vigorous four year program of major sports such as football and basketball, is the best preparation for this purpose. It is quite possible that a marked change may be necessary in the college program if it is to conform to the newer educational conceptions of physical education.

The following list of objectives, while not exhaustive or all-inclusive, suggests at least some of the essentials necessary to make the program conform to the newer conception of a college physical education program:

1. It should remedy physical or organic defects where possible. Recent surveys, however, seem to indicate that the general opinion in college circles, is that the so-called corrective program is not justified on a very large scale in college.
2. It should develop native capacities to the maximum, even where defects exist. Frequently the entire spirit and trend of a man's life has been changed from a negative pessimism to a positive optimism, merely by giving him a chance to develop, in spite of serious defects, those capacities with which he has

been endowed. One of the functions of physical education particularly should be to help the individual diagnose his own possibilities and then develop them to the maximum.

3. It should develop organic functioning to a reasonable degree of perfection.

4. It should arouse interest in a variety of activities of both the big and the little muscle types. These should be particularly adapted to use for recreational leisure time expression. These activities should also include specific training for use in emergencies to insure safety for himself and others.

5. It should expose the individual to a variety of physical-social-mental problem situations involving individual thinking, quick action and cooperative adjustment.

6. It should sound the depths of physical-mental abilities in every man. In other words, it should give him a chance to "find himself," and should challenge his ability not merely in endurance or speed, but in versatility, fine co-ordination and adjustment, powers of adaptation, good sportsmanship, moral courage, etc.

7. It should actually acquaint him with his own strong and weak points, so that he might know those things that should be guarded against, those that should be disregarded, and those that should be given special stress.

8. Finally, it should acquaint him with the dangers of over-straining and over-indulgence in the types of activities not adapted to his particular condition or age.

In the light of the newer conception of physical education and in terms of the objectives just mentioned, a number of practical problems immediately present themselves to challenge the thought of the college physical educator.

First—In view of the marked trend in college circles toward election of work in various fields, should physical education continue to be a requirement of all students as is now common practice? In connection with this problem, it must be remembered that at the present time, many college students are matriculated with a very meager background of physical education training. It is not extreme to say that in many cases college freshmen represent a very poor standard of fourth grade accomplishment, both in skill and knowledge in the physical education field.

Second—Should a student be permitted to enter college if he does not present actual credit units in physical education from high school? How many such credits should he be expected to present?

Third—Should a student be permitted to enroll in college physical education classes for college credit if he shows evidence of lack of this fundamental preparation?

Fourth—If he is not permitted to enroll for credit, what steps should be taken to fit him to undertake the college physical education program with a reasonable expectation of success?

Fifth—What types of selective tests should be established to provide a satisfactory classification of the student at the time of matriculation?

Sixth—Should the student be permitted to enroll in college if his

health condition does not conform to minimum entrance standards?

If he is not permitted to enroll, it would indicate an assumption on the part of the college that a fixed minimum standard of health is essential to success in college or to a reasonable maintenance of the college program; also an assumption that the student will be better off outside the college walls without expert health guidance than in college, where every attention could and should be given to protecting his health. A striking case came to the speaker's attention a few years ago when he sat in a junior high school principal's office and listened to a lad ask the principal if he might not take summer school work. The principal, after thinking it over a moment, said "No," that on account of the boy's health condition, he would be much better off outside of school with some job at hard labor which would help to develop his physique. This seemed to the speaker to be a sad commentary on our educational program, when the principal must advise the boy to go to the truck driver for his health and physical development, while the school stands helplessly by, hoping that he may find elsewhere that training and development which it is incapable of providing.

It is a common experience among college physical educators to see students overloaded with a heavy academic program, impressed with the mistaken notion that they must get through college as quickly as possible, assuming that academic progress or success is the essence of college achievement, regardless of health condition or physical accomplishment. Frequently these unfortunates are forced to give up and drop out of school before the end of the year, broken in physical health and discouraged in spirit. In such cases it doubtless would not have been the proper thing to exclude them from college, but they should have been guided in the selection of a light academic program with emphasis on the type of physical activities best adapted to their needs in terms of physical development and social adjustment. The college should be the ideal place to provide this kind of individual personal guidance in health and physical development.

Only recently the speaker contacted a case of a young college boy in ill health who repeatedly had been before the Welfare Committee on charges of cheating and thievery. It seemed advisable to refer the case to a psychiatrist for study. Within a few months, the lad was completely changed, enthusiastic and happy in spirit. With a revised academic and physical program, he was soon well on the way toward making a success of his collegiate life.

Seventh—What should be the outstanding characteristics of a college graduate such as would indicate an extensive exposure to an advanced college course in physical education? Namely, what types of skills, knowledge and attitudes should he have that might be considered typically collegiate?

These and many other similar problems present to us a challenge to make our actual program conform more fully to the newer educational philosophy. They challenge us to a revised conception of the place of physical education in the college program for the next decade. College curricula are undergoing radical changes. Many subjects will find it difficult to maintain their present place of prominence in the program. As physical educators we, too, face the necessity of justifying and maintaining our present status. A far more delicate and significant problem, however, is that of developing a broader and more varied program; one that will weave a richer pattern in the fabric of college life; and one that will create different but higher standards of physical-mental achievement for the college graduate.

Upon What Basis Should Colleges Be Asked to Give Entrance Credit for Secondary School Programs of Physical Education¹

CLIFFORD LEE BROWNELL, Ph. D.

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DISCUSSION pertaining to credit for school programs of physical education is not new. For years our problems centered around securing credit for promotion from grade to grade. Of more recent origin has been the attempt to establish some sort of equitable basis whereby such credit can be awarded for; (a) graduation from secondary school, and (b) entrance to colleges and universities. It seems that the task is of sufficient importance to challenge our thought and discussion this morning.

While the major problem has been stated as, "Upon what basis should colleges be asked to give entrance credit for secondary school programs of physical education?", the minor problems involved center around such factors as:

- I. What is the meaning of credit and how is it secured?
- II. Why should we seek credit for physical education?
- III. Upon what bases may credit be awarded?

Since the National Education Association recognizes the term *health and physical education* as the administrative title for public school programs, I shall use this name throughout the remainder of the paper.

It seems only fair to admit at the beginning that I am biased in favor of positive credit toward graduation from secondary school, and toward elective entrance credit to colleges and universities for health and physical education. However, I shall attempt to present the case fairly and to indicate certain controversial issues which are apparent.

- I. *What is the meaning of credit and how is it secured?*

There are, at present, five regional standardizing agencies in the United States. They are as follows: (a) The New England Association of Colleges and Secondary Schools; (b) The Association of

¹ This paper discusses the problem primarily from the standpoint of public school education. Dr. J. H. Nichols will present the matter as viewed by college and university directors of physical education.

Colleges and Secondary Schools of the Middle States and Maryland; (c) The North Central Association of Colleges and Secondary Schools; (d) The Association of Colleges and Secondary Schools of the Southern States; and (e) The Northwest Association of Secondary Schools and Colleges.

It is the function of the regional standardizing agency to evaluate the standards or offerings proposed by secondary schools or colleges in their respective geographical districts and to ascertain if these programs are worthy of acceptance. While regulations governing the activities of accrediting agencies differ slightly among the various districts, they are sufficiently similar to justify certain generalizations.

Approval or disapproval of a secondary school or college may be general as applied to the institution as a whole, or it may be specific and concerned with certain programs or subjects.³ It is the latter type with which we are concerned, viz, credit for programs of health and physical education.

Besides the regional accrediting agency which exercises final authority with respect to standards and credit, there is a sub-committee or council in each state which first studies requests made, forwarding a recommendation of its findings to the parent organization. Usually, at least one person in each state committee is a member of the regional accrediting agency; hence, recommendations from state committees are honored frequently by the higher authority.

It is common practice for the average secondary school to require 15 units for graduation. To be an accredited secondary school, each of these units represents successful pursuit of a program or a subject for a certain stipulated amount of time; under the supervision of duly qualified instructors; and in an environment possessing adequate facilities and equipment.

Perhaps the chief reason why secondary schools accept the standard of 15 units is because this requirement is demanded by colleges and universities for entrance. However interesting it might be to discuss the *right* of institutions of higher learning to dictate standards for schools of lower levels, this is not the place to argue the ethics of the situation. The fact remains that the primary objective of most secondary schools is to conduct an accredited college preparatory course.

From among the 15 college entrance units, 7 or 8 are of a *required* nature such as English, mathematics, science, history and foreign languages, while the remaining number are *elective* and may include additional work beyond the minimum standard in the subjects mentioned above, or may be selected from such fields as art, home

³ Douglass, A. A. "Secondary Education." Houghton Mifflin Company, Boston, 1927. p. 95.

economics, music, manual training, and occasionally health and physical education.

At this point let us trace the procedure which would be required if Mr. A. W. Thompson wished to secure credit for secondary school programs of health and physical education in Michigan. He would have minimum standards prepared with respect to such factors as the certification of teachers, teacher load, time specification, facilities, and equipment, submitting these standards to the state committee for accrediting secondary school programs. If this committee approved these standards, it would recommend to the Commission on Secondary Schools of the North Central Association that high schools in Michigan which meet or exceed these standards be allowed to grant a certain amount of credit toward graduation; such credit to be acceptable to the association for college entrance requirements upon an elective basis. The fact that the North Central Association approved of Michigan's standards in health and physical education would not indicate that all institutions of higher learning in the Mid-West district *must* allow entrance credit in this subject. Such approval would mean that colleges in this area *may* accept such credit; hence, the need for further work by Mr. Thompson in Michigan, and by directors in adjoining states to bring the matter to the attention of the authorities in various colleges, urging them to accept the recognized credit for health and physical education.

II. *Why should we seek credit for health and physical education?*

In some states special legislation regulating the conduct of health and physical education designates that credits and penalties shall be applied for success or failure in this program as in other school subjects.

It must be remembered that credit involves some sort of standards and the term standardization causes certain groups to read into this word the yoke of bondage. It is true that standards connote the idea of norms or averages (that figure of speech so feared by those in the lower end of the scale because they believe there is no possibility of attaining such lofty heights, and viewed with alarm by the accelerated group because standards savor of mediocrity).

Why not face the matter squarely from the beginning? The term standardization does not mean crystallization. The development of standards represents the best means of objectifying the goals we seek. Standards in education are not static any more than our aims or ideals are fixed for all-time. The world in which we live is full of standards, some of them subject to frequent change, others that have endured from generation to generation. Thus, standards of conduct, standards of living, standards of education, and standards of communication change often; while standards of currency remain relatively

fixed except that the dollar may be worth more at one period than at another.

That the state is the unit of education is a principle operative since 1803, when Congress definitely settled the character of the future school system by vesting control of township school lands in the legislatures of the various states.³

Under this principle each state is permitted to establish those minimum standards which it deems necessary for the proper education of children within that area. As a matter of fact each state has fixed standards of education, some higher or more definite than others, but still standards have been set.

Let us consider the general characteristics of these standards! In the first place, standards in one state may vary from those in another state situated in the same area; for example, the status of health and physical education in California or Alabama differs widely from the standing of this program in Nevada or Mississippi. Second, standards of education are not permanently fixed; one would not recognize the standards in Connecticut of a dozen years ago as characterizing the educational offering in that state today. Third, standards do not penalize the better school district; the minimum standards set by the state of Massachusetts would in no way prevent Springfield from conducting a program of health and physical education which exceeds the state department regulations.

It is customary to think of the secondary school as a place where students are prepared for something; college, professional school, business, or a trade. In the minds of pupils and parents, the degree to which one is thus prepared depends not upon the extensiveness of the course pursued, the number of years required to complete the course, or the qualifications of the teacher, but upon the number of credits accumulated.

The Seventh Yearbook states the matter fairly when it says, "To the pupil and his parents, the requirement of a subject for college entrance gives to that subject a mark of social distinction; subjects not thus designated are socially taboo."⁴

What, then would be the tangible values of secondary school graduation and college entrance credit for this program? It seems that they might be enumerated as follows:

1. Stimulating boards of education in the retarded districts to approximate the state standards which in turn are approved by the regional accrediting agency.
2. Encouraging boards of education in the accelerated districts, because of local pride, to provide facilities in excess of those contained in the minimum state requirements.

³ Cubberley, E. P. "State School Administration." Houghton Mifflin Company, Boston, 1927. Chap. V.

⁴ Department of Superintendence, "Seventh Yearbook." 1929. p. 145.

3. Elevating health and physical education in the minds of boards of education, school administrators, teachers, parents, and students to a position of respect compatible with other programs for which credit is given.
4. Insuring that students who graduate from secondary schools will have received training in this field equivalent to standards of achievement in other subjects.

It is worthy of comment that out of 42 states canvassed by Meredith, the authorities in all of them except one have manifested an interest in securing credit for health and physical education.⁸ Already some action has been taken in Alabama, Arkansas, California, Delaware, Florida, Illinois, Indiana, Massachusetts, Missouri, Nebraska, Ohio, South Dakota, Texas, Washington, and West Virginia.

Because of the number of states which have taken some action with respect to granting credit toward graduation from secondary school and for college entrance, coupled with the methods which must be employed to secure this credit, it appears that the two organizations assembled here might well consider the fundamental bases upon which such credit may be recommended.⁹

III. *Upon what bases may credit be awarded?*

Let us recall briefly the machinery which is set up for granting college entrance credit. First, there are the five agencies which exercise jurisdiction over various regions throughout the United States. Second, there are the state committees with membership in the respective regional accrediting agency. The regional accrediting agency acts upon favorable recommendation from the state committee. While some state departments of education may rule that all public secondary schools shall give credit toward graduation for health and physical education and that all state supported colleges and universities shall accept such credit as an entrance requirement, it seems that added support will be given to the proposition if action is directed through the authorized channels of state committees and regional accrediting agencies.

Although no special type of methodology has been developed, may I present a plan for your consideration?

1. That the state director or a college director appoint a committee to draft standards in health and physical education to be presented to the state accrediting committee.
2. That the state committee for the foundation of standards be composed of the following personnel:
 - a. The state director of health and physical education (if one exists).
 - b. College directors of physical education.
 - c. At least one member of the state accrediting committee.
 - d. Representatives from public schools; superintendents, principals, and teachers of physical education.

⁸ Meredith, W. F. (Unpublished Thesis.) Teachers College, Columbia University, New York.

⁹ Society of Directors of Physical Education in Colleges and Society of State Directors of Health and Physical Education.

- e. Representatives from state university boards of admission, registrars, and deans.
- f. Representatives from state teachers college boards of admission, registrars, and deans.
- g. Representatives from private and municipal college boards of admission, registrars, and deans.
- 3. That the standards prepared in each state include the following factors:
 - a. Teacher preparation and certification.
 - b. Teacher load or pupil teacher ratio.
 - c. Time specification and distribution thereof among the various divisions of the program (health education, physical education).
 - d. Equipment—indoor and outdoor.
 - e. Facilities—indoor and outdoor.
 - f. Type of program to be offered.
 - g. Basis for awarding credit for graduation from secondary school.
 - h. Amount of credit to be allowed for graduation from secondary school.
 - i. Amount of credit which may be allowed for college entrance upon an *elective* basis.

In summary, it seems that the secondary school provides entrance requirements, not alone for the college, but for business and industry, for the home, and for citizenship. Modern programs of health and physical education possess rich potential factors for successful participation in any of the pursuits indicated above. Standards are essential if we are to measure educational progress objectively. On the other hand, such standards are to be considered merely as a means to an end—as a tool for hastening the fuller realization of our objectives. Since the state is the unit of education, minimum standards should be established here. The task of developing standards for graduation from high school and for college entrance is a challenge to every man assembled here who is seriously interested in bringing health and physical education to the place it deserves in the field of education and life.

The Granting of College Entrance Credit in Physical Education

J. H. NICHOLS, M.D.

Oberlin College

I BELIEVE that this conference is of rather unusual significance, not because of the peculiar importance of the topic which we happen to be discussing today, or because of any contribution that any one is likely to make to your fund of knowledge on the subject, but because it is the first time that the Society of State Directors of Physical and Health Education has met with the Society of Directors of Physical Education in Colleges in any organized way to discuss a problem of mutual concern and a problem that can only be solved by mutual understanding and cooperation of both groups. While this inter-dependence has not been recognized heretofore in any formal way, I am sure we have all realized the many points at which our educational problems touched. It seems to me that one of the greatest values that could accrue from a meeting of this sort would be a keener realization of our inter-locking relationships and our absolute dependence on each other for progress.

Relationships

A few of the more important inter-relationships might be mentioned. Practically all of our students entering college come out of the secondary schools influenced for better or worse as a result of the health and physical education programs. College physical education should be starting in where secondary school physical education ceased. I wonder in how many institutions the previous training and experience in physical education is ever given a moment's serious consideration. Today the elementary and secondary school programs are in no small measure being set up and motivated by the State Directors of Health and Physical Education. Their ideals and vision are providing the leadership and the incentives for progress.

The State Directors are by far the most powerful force in physical education today, not only in the state but in the nation. Their influence is doing more to shape and mould public opinion than that of any other one group of individuals in this field. They have tackled real problems in the field of inter-scholastic sports, problems that we have been very clever in side-stepping. They have conducted real educational experiments in giving the boys a larger part in the handling of their sports and in working for real equality of competition in sports, in setting standards for competition, and in eliminating many

of the abuses of state and national tournaments. This is a mere suggestion of what has been accomplished in many states in one field. In other fields their contributions have been even greater.

Teacher Training

In teacher training institutions problems are constantly arising that must be handled through cooperation with the state directors and the state departments of education. Standards for teacher training institutions are set up by the state departments. If teachers are to be certified for teaching in a given state, they must meet certain state standards and requirements which the state director has been influential in setting up, working usually in cooperation with the colleges and universities of the state.

These are only a few of the inter-relationships which are bringing college directors in closer working contact with state directors every day, whether we realize it or not. It is absolutely essential for the successful handling of these problems and many others which are developing, that we get together occasionally, become acquainted and talk over our problems. The acquaintances and friendly relationships that should result will probably be of more value than anything on the program.

In discussing this problem of granting college entrance credit in health and physical education, a problem, which as Dr. Brownell has so clearly shown, is dependent on all of us for a solution, I will deal only with a few phases as it relates to colleges and universities and avoid as far as possible any duplication of material that has already been covered in the previous discussion. I will discuss the problem under the following headings:

First—Some of the educational and administrative aspects from the college standpoint.

Second—Results of the survey in 1920 on the problem of college entrance requirements in physical education.

Third—Results of the survey of present practices and the opinion of college and state directors in regard to the granting of college entrance credit.

Fourth—Classification of this group opinion.

Fifth—What are the values to physical education in general and to colleges and universities in particular to be derived from this step?

Sixth—In what ways can we assist in securing the acceptance of credit if we believe it to be desirable?

Seventh—Conclusions.

FIRST—Some of the educational and administrative aspects of the problem from the college standpoint.

This question of the acceptance of college entrance credit in physical education probes to the very roots of your educational philosophy. If physical education is educational and has reached the stage where it is not merely physical training and body building, then we are justified in expecting that the subject will receive credit or penalties for success or failure the same as in all other school subjects. If one unit of credit is granted in high school towards the sixteen required for graduation for the completion of a four year required program in physical education, and if we grant positive credit in college toward the degree, is it not logical and sound educational procedure to recognize the work completed in the secondary schools by accepting one unit of credit within the fifteen or sixteen units required?

This problem also involves the whole question of standards for the selection and admission of students for college. Different methods and standards for admission are operative at different types of institutions. In most cases state supported institutions are required by law to accept any student presenting a certificate from a first class high school. This would make the question of accepting entrance credit in physical education comparatively simple, if approved as educationally sound. However, most of the privately endowed universities and colleges base their selection on certain scholarship standards, such as the upper third of the class, personal ratings of the applicants as to their social qualities, their character, etc., by instructors and others, psychological tests and personal conferences. Still others, in addition to the above, require the passing of the college boards. Whether such colleges will be willing to accept physical education credit within the units required for admission will depend on our ability to convince our faculties and administrators that it is a sound educational step.

Recently a few colleges and endowed universities have considered the possibility of comprehensive tests, dropping the question of units of entrance credit altogether. If adopted these schools would then have to determine their standards for admission in health and physical education and set up certain comprehensive tests the same as in other subjects, and if the student was able to pass them he would naturally be granted a large amount of elective privilege. Or they might waive all entrance requirements and standards and admit everyone, as the practice is in most institutions, who can meet the scholarship, social and character standards, regardless of physical fitness, and previous training and experience in physical education. Whether the general procedure of accepting a student for college when he has acquired a certain number of units in various fields of study will be-

come the educational policy of the future is apparently beginning to be questioned by some of our educators.

SECOND—Results of the survey in 1920 on the problem of college entrance requirements in physical education.

Exactly ten years ago a survey was made by a committee appointed by the Society of Directors of Physical Education in Colleges to study the question of college entrance credit in physical education. Some of the results and conclusions will be of interest in revealing the trends and progress that have been made since 1920. At that time the question was asked of college executives and of members of the Society, as to whether "they felt that entrance credit in physical education should be required or accepted of students entering universities and colleges from secondary schools." Thirty-six college executives replied in the negative and six in the affirmative. The college executives' chief reasons for disapproving of the procedure were as follows:

1. No uniformity in standards, equipment or teaching in the high schools.
2. It should be left to the secondary schools to work out their own curricula. It is not up to the colleges to determine their curricula.
3. Methods of measuring and grading physical education are not standardized. The health requirement and physical examination are sufficient.
4. It is not of sufficient importance. College education is not dependent on this.

The executives, six in number, who approved of the entrance requirement, put it chiefly on the basis that: It would help to standardize and place the physical education program on a better educational basis in the secondary schools.

The members of the Society (thirteen), who were opposed to the required entrance credit, objected chiefly on the following grounds:

1. Not practicable or feasible because of the lack of definite standards.
2. Entrance requirements should be simply the health examination and simple physical ability tests.
3. It would be better to have a standard of development for the same reason mental and psychological tests are given. We need a test similar to the I.Q. (intelligence quotient), an M. Q. (motor quotient) which will indicate organic fitness and development. This would be better than an entrance requirement. The tendency is away from placing emphasis upon entrance requirements on unit bases and toward the use of universal intelligence tests for determining qualifications for college entrance. Physical education should develop a physical test which will have sufficient significance to be included in such a scheme of general analysis of the individual qualifications for college entrance.
4. The development of any such entrance requirements should be very gradual. The first step should be to offer elective entrance credit, and after most schools adopt this, it might later be introduced as a requirement.

The conclusion reached from our survey (which of course is subject to the criticism of all opinions gathered in this way, namely that men in the field and executives are too often adherents to the *status quo* was that, until physical education becomes more universal and better standardized in our secondary schools, no entrance requirement or entrance credit can be successful. It was also recommended that the Society, through its members, recommend to the various institutions represented, that elective credit, to the extent of one unit, be offered in physical education from certain accredited high schools and preparatory schools beginning at a future date such as 1925.

Ten years have past; much water has gone under the bridge. Thirty-seven states require physical education by law or through the state board of education regulations. Seventeen states allow credit for physical education, of which 15 states allow for four year's work, one for two year's, and one for one year's work. Two states require the credit over and above the 16 units. Eight states allow credit within the 16 units. Of 254 school systems in the United States 183 require physical education with credit, 63 require it without credit. In 46 of the larger cities physical education is required for four years in high schools. Twenty one states have state supervisors of health and physical education, and in these states tremendous progress has been made in the setting up of health education programs, in the development of activity programs, in the improvement of the teacher training program and the establishment of high professional qualifications and training for permanent certification in this field, and within the past few months a committee of the Society of State Directors of Physical and Health Education has made recommendations urging uniform standards for certification in the field of physical education for all states.

It is doubtful if any field of education could show as great a development in a similar period of years. While this rapid growth has not been without considerable pain, the point has now been reached in many states where the programs have been carefully developed under the direction of state supervisors where they believe they are justified in asking the colleges to support and recognize the standard of work, by granting at least one unit of credit within the sixteen, to any student from the accredited list of schools whose programs have been approved by the state department of education. The following letters indicate the approach which is being made to the universities and colleges in the state of Ohio:

(Letter—To Registrars)

To: Registrars of Ohio Colleges and Universities

Standards for high school programs of instruction in Health and Physical Education have been issued to all school superintendents in the state. A copy

is enclosed to you. On the basis of the superintendents' reports, a list of accredited schools will be submitted to you by the first of the year. Schools appearing on the list are at present recognized by the State Department as offering creditable programs in this field.

A modern program of health and physical education consists not at all of a cursory course of instruction in physical training exercises, but, rather, of a graded program including a study of hygiene and a training in motor activities which are educative in nature. The high schools of the state are increasingly complying with the law (Sec. 7721) by granting graduation credit for success in this subject. We invite the colleges of Ohio to complete the picture by recognizing, within the sixteen units required for entrance, *one unit* in health and physical education from schools appearing on the accredited list.

Very truly yours,

J. L. Clifton

Director of Education

(Letter to Directors of Physical Education in Colleges)

Dear Director:

The matter of college entrance credit for approved high school programs in health and physical education is again at hand. This office has just sent out the printed standards for such, a copy of which is enclosed to you. A list of accredited programs will be made up on the basis of the returns.

It is important, of course, that more colleges signify their willingness to grant entrance recognition to one unit of health and physical education within the sixteen required. Schools are required by law to grant such credit and it is desirable, for a number of reasons, to have colleges accept the credit for entrance.

A letter from us to your registrar is also enclosed. By thus keeping you advised of the operations of the State Department in this matter, may we not count on your cooperation in working with your registrar and faculty for our mutually desired ends? Anything you can do will be helpful, I'm sure.

Yours very truly,

D. Oberteuffer

Supervisor of Health and Physical Education

State departments of education believe that colleges will recognize this unit towards college entrance as soon as they can be assured that the work offered is adequate in amount, progressively graded, educative in nature and taught by trained teachers. State supervisors, in studying the situation, have found a very definite trend in the past few years in most of the states toward the granting of credit for physical education toward high school graduation. As a natural result of this trend colleges and universities are beginning to grant entrance credit for high school physical education. In their opinion health and physical education is gradually rising above its physical training and athletic atmosphere and receiving its due recognition as an educational subject. They recognize that the granting of credit in physical education does not make the work of more value, but as schools are organized and administered at the present time, the fact that physical education does not carry credits practically prohibits the teaching of it in small high schools.

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THIRD—Results of the survey of present practices in colleges and universities and the opinion of college and state directors in regard to the granting of college entrance credit.

Results of the survey just completed through the cooperation of the members of the two Societies reveal the present situation in the colleges and universities of the country with respect to entrance credit in physical education.

Colleges and universities allowing entrance credit for physical education taken in secondary schools are as follows:

1. University of Southern California reports: yes, one unit out of sixteen.
2. Washington University reports: yes, if high school accepts it we do. Generally one unit of credit.
3. Washington State College reports: one unit from an accredited high school.
4. University of Florida reports: yes, not less than one-half and not more than one unit.
5. University of West Virginia reports: one unit. No questions are asked. If a high school certifies one unit of credit it is accepted. All colleges and teacher training institutions in West Virginia accept one physical education unit for entrance.
6. University of Washington reports: one unit from an accredited high school.
7. University of Cincinnati reports: one unit, in three groups of those required by secondary schools for graduation. All Ohio colleges accept one unit within sixteen, but physical education is one of three special units including music and manual training. Only one unit may be in this group.
8. Ohio University reports: one unit if the physical education course is approved by the state department of education and the school is on their approved list. Several students used their physical education credit for entrance last year.
9. Bowling Green Normal College reports: one unit on the basis of standards set up by the state department.
10. Miami University, Oxford, Ohio, reports: Will accept entrance credit as soon as state department publishes the list.
11. University of Nebraska reports: one unit of credit within sixteen.
12. Nebraska Wesleyan reports: one unit of credit within sixteen.
13. New York City College reports: one-half unit if physical education carried hygiene with it.
14. Pennsylvania State reports: In some instances where it may be counted as a necessary elective and then only one-half or one unit.
15. Illinois College reports: one unit within fifteen.
16. Eastern State Teachers College reports: one unit of fifteen.
17. Rockford College reports: one unit of sixteen.
18. De Pauw University reports: one unit of sixteen.
19. Gooding College, Wesleyan, Idaho, reports: one unit.
20. Louisiana State University, Baton Rouge, La., allows one unit of credit for high school physical education in cases where the students were allowed this credit toward graduation.
21. Millsap College, Jackson, Miss., allows one-half unit in physical education as entrance credit.
22. Southwest Missouri State Teachers College, Springfield, Mo., allows one unit of physical education to be offered at entrance.
23. Florida State College for Women, Tallahassee, allows one unit of entrance credit.

The North Central Association of Colleges and Secondary Schools recommends one unit in physical education and health be required for graduation for all students in the four year high school course. (They also have defined and interpreted what constitutes a unit in physical education.)

The Florida Principals' Association favors one unit of credit in health and physical education within the sixteen required for college entrance. They have voted to ask the Southern Accrediting Association for this credit.

Ten years ago, as far as I know, not one college in the United States was accepting entrance credit in physical education. Today twenty-two colleges are granting from one-half to one unit and many others are accepting it as one of three special units (including manual training and music). This survey seems to indicate a very definite trend, especially in the state universities and teacher training institutions, toward the acceptance of entrance credit in physical education under certain conditions and restrictions set up in most cases by the state departments of education and the district accrediting associations.

What is the opinion of the college men represented in our group regarding the acceptance of entrance credit and how this problem should be handled?

The result of the survey just completed indicates that a great majority believe that the standards for the acceptance of entrance credit should be set up by the state departments of education and the secondary schools, with the colleges and universities possibly co-operating through the medium of the state departments and the accrediting agencies. However, many divergent and interesting ideas have been expressed regarding this problem and several seem of sufficient significance to warrant quoting.

Dr. McCurdy suggests: "Colleges might well have four requirements for entrance:

1. Satisfactory physical examination.
2. Satisfactory corrective strength tests.
3. Satisfactory skills.
4. Satisfactory organic capacity.

The motor ability tests adopted a few years ago by the American Physical Education Association as a result of four year's work by a large committee indicate the type of tests for satisfactory skills."

Mr. O. C. Bird of Ohio University states: "We have had several students this year from accredited high schools using their physical education credits for entrance. I believe it will be a great stimulus to physical education in the high schools of the state. I feel sure that the responsibility for this should center up in the state department. You can see where we would be if each college tried to enforce their own ideas in this matter."

Dr. Jay B. Nash of New York University: "I have been thinking over

this problem for some time, and the nearest conclusion I can come to, as a point of departure, has to do with the elimination of the question of credit for college entrance or for high school graduation. I cannot possibly see that they would be of any value. High school physical education, at the present time, is somewhat meaningless because promotion is almost entirely made on the basis of attendance. With the present college trend specialization is represented in the new organization in the University of Chicago.

"I am wondering whether or not we should base our whole plan upon comprehensive tests. These would be taken in the high school when the individual feels that he is able to pass them, and after which he should be given a large amount of elective privileges. Colleges might then make some requirements in connection with a standard. The content of these comprehensive tests is going to be very difficult to work out, but it can be done. Undoubtedly it will consist of some elements of strength, skill, games and probably health knowledge and health observance. Certainly it should contain the removal of obvious handicaps."

Dr. D. K. Brace, University of Texas: "I believe that colleges should participate in setting up these standards, but state departments should not wait on the colleges if they hold back. Colleges should first have definite standards for their own work in physical education. On the basis of these standards colleges should set up as *suggestions* anyway, standards which they wish to see met by entering students."

Mr. C. H. McCloy, University of Iowa: "I believe it is not the business of the college to prescribe secondary school curricula. Such standards should be devised by the state departments of education. It would seem to me then immaterial whether they were accepted by colleges or not. The important thing is to have definite curricula built up for the high school as a whole, rather than to require simply of those who are going to college. I believe, therefore, the best way for colleges to proceed is to push for more complete programs throughout the various states, rather than simply require something for entrance which could easily be met by having the few who go to college elect as work."

Dr. H. A. Scott, Rice Institute, suggests: "... colleges and universities may be of the greatest assistance to the state departments, through cooperation with the state department and the state supervisor, by improving their own departments of physical education and by improving the teacher training program."

Dr. Carl P. Schott, West Virginia University, feels that: "colleges and universities must first offer justifiable programs of physical education before they can hope to bring about any constructive changes in high school curricula. Something worthwhile should grow out of a joint meeting of all concerned."

Mr. John A. Davis, Stevens Technical Institute, believes that: "just as a student has to meet a standard in mathematics for entrance, so he should have to meet a standard in physical education, especially in health habits. The college should set the standard by stating that a certain degree of health should be attained."

"Just saw the announcement of the death of an alumnus less than five years after graduation. He leaves a wife and one child. Upon entrance to college he had a very bad heart condition. To take this course in engineering he had to abuse himself—late hours, sedentary living, confinement, etc., poor air, no sunshine. I urged him to quit and go on a ranch for a year or two. He spent at least \$4,000 in an education, established a home, wife and child, and then had to leave them, etc. Is this education?"

Dr. S. C. Staley, University of Illinois, states: "Secondary schools should have a graded program of activities for each semester. Students taking these

courses should be graded for what they learn and not on their attendance, attitude, etc., as is the present practice. Students graduating from such a course could then be certified as having learned certain materials, as is the practice in other courses offered in secondary schools. This certification should not be in terms of physical ability tests, but in terms of the student's learning activities taught. This learning would include rules of the activities, skills in performing activities and technique in playing the activities. In other words, a student taking work in basketball could be certified as having really learned to play basketball. A student taking a course in swimming could be certified to the effect that he is able to swim and so on."

Dr. Edgar Fauver, Wesleyan University, says that: "in my opinion we should not attempt to give credit. Physical education is partly, if not entirely, a health measure and should be a part of a college program. This program if efficiently administered will take into account previous experience and will broaden the possibilities for further work."

Mr. Darwin Hindman, Ohio State University, believes that: "the most important consideration is for the colleges to set up a physical education curriculum that recognizes differences in preparation so that good high school physical education will be recognized."

Dr. Frederick Rand Rogers, of New York, states: "I am opposed to granting credit for attendance upon physical activity programs. We in New York are coming to believe that a sound program of physical activity will carry its own weight with administrators, and therefore no extrinsic incentive to motivate, or a prop to support, the program is necessary. On the other hand we should approve of a requirement on the part of universities that students exhibit evidence of physical fitness, including the elimination of remediable physical defects, and a few fundamental skills, such as swimming, as prerequisites to admission. Similar provisions might well be made for granting the high school diplomas. *Please note* that we are emphasizing the *positive achievement* of results in terms of improving the health and other phases of character, rather than the securing of abstract credits which in themselves have no meaning to any person other than to him who assigned the points."

Dr. Joseph E. Raycroft, of Princeton University, writes: "There are few phases of the work in physical education in colleges in which I am more interested than I am in the problem that is fundamental to this whole series of questions. Briefly, my feeling in the matter is this: We are not in a position to arrive at a decision on the question of requiring or accepting entrance credits in physical education as a factor to be considered in admitting a student to college until we have set up and pretty generally agreed upon the objectives of the work in physical education and some means of determining the degree to which these objectives are being attained. It seems to us that the grouping or classification of students should be based upon the consideration of the following factors:

1. The student's growth and development in relation to his age.
2. State of nutrition.
3. General muscular development.
4. The ability to handle himself in fundamental physical tests.
5. Presence or absence of important physical handicaps.
6. Functional condition of circulatory and nervous systems, elimination and glands of internal secretion, as shown by a thorough medical examination.

"My position is that I don't see how we can set up a standard of requirement for entrance to college until we have worked out a comprehensive plan of objectives, program of activities and finally tests which will enable us to determine progress or lack of it in our college programs."

Dr. Martin I. Foss, Director of the School of Physical Education of the Chicago Y.M.C.A. College, reports an interesting experiment whereby men who have had experience either in college or *elsewhere* in physical activities can secure advanced standing by taking what they call exemption tests (Fig. 1 and 2.) By this means any student can apply to the department for such test or tests and if he is successful in passing them he will be given advanced standing. (Sample—Golf Exemption Test)

Figure 1.

APPLICATION FOR EXEMPTION TEST IN PHYSICAL ACTIVITIES

To the Registrar:—

I desire to apply for permission to take the "Exemption Test" in the courses marked. (Put X in appropriate blank.)

- | | |
|---|---------------------------------|
| () Sophomore apparatus (Parallels and Rings.) | () Marching and Calisthenics |
| () Swimming | () Introductory Apparatus Work |
| () Tumbling and Pyramid Building | () Basketball |
| () Junior apparatus (Mats, Horse, Horizontal Bar.) | () Volleyball |
| | () Winter Sports |

Enclosed find the Exemption Fee of dollars (one dollar per course) which I understand is not returnable.

Dated.....

Signed.....

The above student has the necessary prerequisites entitling him to attempt the test and with my full approval.

Signed.....
Instructor in Physical Activities.

Figure 2.

GOLF
Exemption Test

I. THEORY

(a) Terminology

1. Ace
2. All square
3. Address the ball
4. Approach
5. Away, or Out
6. Backspin
7. Ball deemed to have moved
8. Ball dropped (how?)
9. Birdie
10. Bogie, or Bogey
11. Brassie
12. Bunker
13. Casual water
14. Cup, or Hole
15. Divot
16. Dogleg
17. Dormie
18. Driver
19. Duffer
20. Fore!
21. Foursome
22. Green
23. Grip
24. Hazard
25. Halve a hole

Define the following terms:

26. Honor
27. Hook
28. Interlocking grip
29. Jigger
30. Line of flight
31. Links
32. Lost ball
33. Match play
34. Medal play
35. Mashie
36. Mashie niblick
37. Midiron
38. Overlapping grip
39. Open stance
40. Square stance
41. Closed stance
42. Putter
43. Par
44. Slice
45. Schlaffing
46. Stymie
47. Spoon
48. Tee
49. Waggle
50. Winter rules

(b) Use of Clubs. What is the purpose of the following clubs?

Tell how and where each should be used.

- | | | | | |
|-----------|----------|------------|-----------|-----------|
| 1. Driver | 2. Spoon | 3. Midiron | 4. Mashie | 5. Putter |
|-----------|----------|------------|-----------|-----------|

II. PRACTICE

Demonstrate the following:

1. Interlocking grip
2. Overlapping grip
3. Stances; square, closed, open

4. Strokes with the following clubs:

- | | |
|----------------|------------|
| a. Wooden Club | d. Niblick |
| b. Midiron | e. Putter |
| c. Mashie | |

Dr. J. F. Williams, Teachers College, Columbia University, writes: "you may say that my attitude is one of expectancy, but I don't believe that we can get anywhere at this time if we base our conclusions upon individual opinions. The problem is too complicated for any particular progress in that direction until distinctive facts are known."

FOURTH—Classification of this group opinion.

The opinions of those representing both the State Directors and the College and University group may be classified into five main groups.

First, those who believe that physical education is primarily an educational procedure which should be graded and progressive in character, adapted as far as possible to the physical needs and abilities of the individual and required of all students, under trained leadership. In such a scheme they believe that the same credit and penalties should be applied to success or failure in this field as in any other phases of education. If it is educational, then credit should be given in high school and in college for this work. If positive credit is recognized and given in both high school and college, it would follow by the most elemental logic, that entrance credit should be accepted by colleges and universities, if the secondary school programs meet the educational standards set up by the state departments of education and the state accrediting agencies.

A second group consider physical education primarily if not entirely a health measure and as such it should be required in the secondary schools and colleges without regard for credit, although it should be progressive in character and should take into account the previous experience, abilities and needs of the various individuals. Students might be required to meet certain minimum requirements in health practice, knowledge and physical skills before receiving their diplomas.

A third group, while they consider physical education primarily educational in nature, feel that credit in physical education is of no great concern. They suggest, as a substitute for this method, the use of comprehensive exemption tests. The colleges and universities then might set up a requirement that students exhibit evidence of physical fitness, including the elimination of remediable physical defects and a few fundamental skills, as a prerequisite to admission. This they believe would place the emphasis on *positive achievement* of results, rather than the securing of abstract credits.

A fourth group favor a combination of the acceptance of entrance credit and the setting up of certain minimum standards as prerequisites to college entrance, including such factors as : 1) satisfactory health examination, 2) satisfactory skills, and 3) satisfactory organic capacity.

A fifth group take the position that the problem is too complicated for any particular progress in this direction until more distinctive facts are known. We must first work out a comprehensive plan of objectives, program of activities and finally comprehensive tests which will enable us to determine our progress or lack of it.

FIFTH—What are the values to physical education in general and to colleges and universities in particular to be derived from this step?

- I. It should result in an increased recognition on the part of colleges and universities of the educational value of health and physical education and will be a very effective means of placing physical education on a plane equal to that of other so-called academic subjects.
- II. It will be a tremendous stimulus to schools in improving the standards of their programs and in selecting trained teachers when they find that certain schools are having their physical education credit accepted by universities and colleges in the state while certain others are not accepted.
- III. It would necessitate our setting up our own objectives and standards, program of activities and tests to determine what the college man should be taught in physical education. (This study is now being carried on by the Society through the committee headed by Professor W. R. LaPorte.)
- IV. It would make possible the setting up of college physical education curricula that recognize differences in preparation and differences in ability, and if it accomplished this, it would be quite an achievement.
- V. It might well lead to the organization of sub-freshman courses in physical education similar to the sub-freshman courses in mathematics and English, now being given at many institutions.
- VI. It would result in universities and colleges doing some real research work on standards in health and physical education at the college level.
- VII. It would result in more men and women entering the teacher training courses in physical education who have had some definite preparation and have some idea as to whether they are qualified for this field of teaching. It would be of great assistance to those colleges offering majors in physical education.
- VIII. Finally, it would mean that a much larger percentage of our entering freshmen would have received a certain amount of training in health and physical education, thus enabling us to adapt our programs to the individual needs of the student to a much greater degree.

SIXTH—In what ways may we who are in the colleges and universities assist in securing the acceptance of credit if we believe it to be desirable?

- I. We can help by urging the state departments and the state

- supervisors of health and physical education to attack the problem and by giving it our active support.
- II. By enlightening our administration and faculty on the educational values of the program and urging that credit be accepted where proper standards have been met.
 - III. By only accepting students for the teachers' courses in physical education who have had previous training and experience and are qualified physically, socially and mentally to do high grade work.
 - IV. By raising the standards in our teacher training institutions to at least the level of other fields of education. The work that is being carried on in some of our institutions of higher learning today, under the guise of physical education and athletic coaching, is an educational disgrace and naturally raises grave doubts in the minds of other faculty men as to the educational vision and ideals of the graduates of such a course and of those administering it.
 - V. By giving courses in the schools of education for principals and superintendents so that they will appreciate the true significance of the program.
 - VI. Finally, by leaving it to the state departments and secondary schools to set up their own curricula and standards, and to assist and support them in every way possible if we believe they are sound. If sound physical education programs are not developed in the secondary schools in the next decade it will be the fault of the colleges and universities, as it will be our graduates who are administering and teaching these programs.

SEVENTH—Conclusions.

The opinions of ninety college directors, representing about 95% of the institutional membership of the Society of Directors of Physical Education in Colleges and twenty-one state directors, representing 100% participation on their part, have been received, expressing their views regarding this problem. I wish to express my great personal appreciation and that of the Society's Committee, which has been interested in this problem, for the prompt and cordial response from the members of both of our organizations.

Whatever your opinion may be, it is perfectly clear from the large amount of information gathered, that there is a strong and decided trend, especially in the state universities and state teacher training institutions, to accept college entrance credit in physical education from those high schools whose standards have been approved by the state departments of education and which have been placed on the state accredited list as giving satisfactory programs in physical educa-

tion. The list includes twenty-two different colleges and universities, representing fifteen different states.

Eight states, acting through the state departments of public instruction and on the initiative of the state supervisors of health and physical education, have set up standards covering time allotment, training and certification of teachers, facilities and equipment and programs, leading to the acceptance of academic credit of one full unit, given to all pupils as a result of the successful completion of the four year course; and are inviting the colleges and universities to complete the picture by recognizing, within the fifteen or sixteen units required for entrance, one unit in health and physical education from schools appearing on their accredited list.

In closing I wish to make it perfectly clear that this paper does not purport to represent the opinion or judgment of the Committee of the Society on this problem, but only my own, although some of the material gathered in the name of the Committee has been used in this paper. I have, however, attempted to present all points of view and not just one. I hope that it may stimulate free and friendly discussion of many of the questions that have been raised and the ideas that have been advanced centering around this complex problem, and eventually may result in the crystallization of the group thought in real constructive achievement in the field of physical education.

Corrective and Restricted Exercises

By JAMES F. ROGERS, M. D.

*Department of the Interior, Office of Education,
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I N considering corrective and restricted exercise I have one qualification which most of you, and possibly all of you, do not possess. I have been exposed to the *process* and to a considerable degree. I have examined the subject from the standpoint of having taken the medicine prescribed for a cure, and one who has had this experience becomes especially interested in how the medicine works on others. Ordinarily the mender of bodies, whether by chemicals or mechanical means, does not suffer from the ailments he attempts to cure. He follows tradition, as handed down by the learned professors in the schools which he has attended, and there is nothing *better* to follow. Usually he has scant time to find out whether the means he has been told to employ actually achieve the ends for which they were intended.

While I took delight in every form of physical activity, I entered a school of physical education for the sole reason that I was not robust, the result of an accident followed by illness. I was in search of better health, and this was promised by the professors of all systems of gymnastics both foreign and domestic.

In this school I had the advantages of the health service and physical education department of a great university. I was given a very thorough examination and the more so because I was not a very promising specimen. I was measured, which means that heights, depths, lengths, breadths, girths, etc., were taken to the number of 40 or thereabouts. Some one had damaged, or was damaged by, the machine which recorded the strength of every muscle in the body so I escaped that part of a complete examination. Then I was summed up and my prescription made out.

I did not measure up to the ideal, first because my posture was not considered of the most acceptable type. I had pride in possible personal appearance, however, and I had read enough about the results of physical culture or training (or whatever it was called), to feel certain that I should soon rival any Greek statue in physique and at the same time acquire that superlative mental and moral superiority, which is said to go with a fine carriage of the body.

When the examining physician got below the belt he called the Director of Physical Education and they held a consultation. This was brief, for the first examiner merely pointed and the other merely nodded. I did not know at the time what remarkable condition they

By neoblog

had discovered, but from my present viewpoint I realize that *viscer-optosis* had just come into fashion, and they had given it to me. If I had been fully informed I might not have survived. However, certain corrective exercises for the abdominal muscles were recommended as a *sure cure* for anything that ailed one in that region so I did not worry.

Glancing at my feet the examiner wrote something which I found afterwards to be *pes planus*. Being wholly unversed in other language than my own, I was very much concerned as to what dreadful condition existed at the very foundation of my being and I felt but little relieved when I learned that I had flat feet, for this sounded like something disgraceful. However, this condition would soon disappear with special corrective exercises.

I was presented with a graphic chart on which my 40 measurements were plotted to a millimeter and it was explained that most of my own dimensions were below what they ought to be for perfect symmetry and that I should bring them up to at least the median. This was disappointing as I had ambitions to be something more than average. However, I knew I had to attain the average first. I knew also that I had a good start, for some of my measurements, (including my arm reach) were far above the median. I could at least *reach* toward the ideal. The large array of apparatus in the university gymnasium also lent encouragement to my ambitions.

For good measure I was advised to increase the size of my chest so that I should have more room for my heart and lungs although neither of these organs had ever complained of lack of space. This recommendation for big chestedness I found later was a general prescription and it seems to have been overlooked by the examiners that my chest was the largest part of me. I forgive them for the oversight although I spent many an hour in deep breathing, and in pulling chest weights on the quarter circle, half circle, three-quarter circle; hanging, lying, sitting and in intermediate positions.

In a word, I was set to work correcting Nature's mistakes (for I suppose she was to blame) of posture, chest, abdomen, feet and general proportions including the balancing of my arms and legs, for my right arm was 14 millimeters larger than my left and my right thigh was 19 millimeters less than my left. This was important for one could not be well balanced in mind and morals unless his bodily parts were in harmony.

Strange to say I was not labelled underweight though by the standards of a more standardized age I was not less than 30 per cent underweight.

I blush to reveal all these defects to your gaze but I do it in the interests of science and you must remember that I am speaking of my defects *before*, and not *after*, taking corrective gymnastics. Really

the examiners were not as keen as they might have been for my left eye was, at the time, an eighth of an inch nearer my nose than my right, and my nose was not quite plumb. I also had a deflected septum which would certainly have been noted and corrected in a later age.

I worked hard to correct all my faults and to secure that ideal physique mapped out for me on the anthropometric chart. I was exposed for two hours every morning to general gymnastics, foreign and domestic, and in the afternoons I exposed myself to the special corrective exercises at the University.

At the end of two years my anthropometric chart showed that I was mostly below the average, there was still lack of symmetry, my chest was not large and no one told me that I had lost my pes planus. My viscera were underslung as before and the triple mirror did not lie when it said I was still not an Apollo in posture. However, I was not very old and was still ambitious.

I was foolish enough to go into the business of physical education. The first work of a teacher is to set a good example. I realized that until they were finally corrected I could, with the help of my tailor and cobbler, hide from my classes my lack of ideal proportions, my visceroptosis and my pes planus but a glance in the tailor's multiple mirror made it evident that ample clothes could not quite cover my faults of carriage. I knew also that with this defect went a depressed mentality (because of poorer circulation in the brain) and inferior morality (inferiority complexes were not then invented) which did not consort well with setting a shining example in the teaching profession. So I went to work at that carriage of mine with an ambition bred of both idealism and a desire for bread and butter.

Misery loves company of its kind and naturally I became especially interested in others whose posture did not seem perfect.

Of course in those earlier days posture had not been nicely standardized and pigeon-holed and I did not know just where mine belonged, except that it was poor or bad. I do not have to inform you that we now know our places. We all belong to one of four types, A, B, C, or D, or, in less cryptic language, we have either good, fair, poor, or bad posture. It is all so very definite and scientific. Unfortunately a few of us may fall on the dividing line between A and B or C and D. One posture specialist insists on putting us into the cubby hole on one side of the partition while another pushes us into the cubby hole on the other side. The sinner with his "good-poor" posture, or "poor-bad" carriage is to be pitied. He resembles not a little the Wandering Jew.

One recent classifier found it necessary to call in 100 assistants, professional and amateur, and he found that the former were no better than the latter in this business of classification.

I might say in passing that I have never seen definitely stated just why the terms "good and bad" to say nothing of "fair" and "poor" are used nor why the letters run as they do. No matter what their origin the terms indicate that those who are "bad" should be "good" if they wish to remain in polite society.

Besides classification, we have, of course, certain graphic representations, the resemblance to which one is to seek or shun, and there is the classic test of the vertical line which must pass through your ear (part of ear not specified), the middle of the shoulder, the hip, the knee and ankle joints. Some authorities say the instep, which merely goes to show that authorities disagree or at least differ even though this disagreement may throw the body three inches out of plumb with itself. I have wondered how this test was first worked out. This summer I learned the secret. Certain German anatomists took a cadaver, froze it, sawed it into sections crosswise, found the center of gravity of each frozen section and, presto, the thing was accomplished for all time. They also applied higher mathematics to the problem and if any of you wish some heavy gymnastics in figures I think you will find it in the works of Edward Weber and his brother.

It is taught that the better our posture the better our health, our mentality, and our morality, but since no one knows just where to draw the line between good and bad posture we cannot be sure that a person under consideration is definitely healthy or surely moral. However, we take it for granted that those who are in the A posture class are superlatively vigorous and angelic while those in the D class are very inferior mentally and morally, and will be, or deserve to be cast into outer darkness.

It is taught of course that a fine carriage adds total impressiveness to the person—in other words, makes him aesthetically attractive or at least, impressive to a degree with which conclusion we can hardly quarrel any more than we can with the assertion that a person with a certain type of facial features which we like is, even without razor or rouge, good to look upon. However, in passing, I would have you note that most people are homely in lesser or greater degree. Also we still have to ask what is a fine carriage, for styles in carriages change.

It is taught that posture can be modified by sufficient effort of the will directed by science. We are given to understand that if we wish we can change from the B class to the A class, or from the D class to the A class, and secure thereby all the benefits physical, mental and moral which attend this change.

To go back to my own history. With all my efforts in school and for 20 years afterward I could not see that, except possibly for a somewhat better carriage of the head and shoulders I had made any approach toward the supposedly better end of the posture scale.

My efforts at changing the carriage of public school and college students met with no better results. I got them to hold their heads a little higher and their shoulders farther back but that was about all. Then followed some ten years of observations of the pupils of others in a normal school of physical education in which one would expect results if anywhere. There was about 15 years' experience in an orthopedic clinic. There appeared no evidence of change from one type to another.

I have scanned eagerly all the reports of physical education activities which have included statistics of results of posture work on a scale worth considering. I think that an improvement has not been claimed in any of these for more than 15 per cent of students (although about 90 per cent are usually classified in the B, C, and D grades) and this despite the fact that in the beginning of the year the teacher is looking for faults and at the end of the year he would like to ignore them as far as possible. Even with a 15 per cent improvement which I do not question posture tends like the traditional frog in the well, to slide back toward the bottom during the vacation, for with an annual improvement of 8 per cent all of the pupils, should, after 12 years of posture work in public schools (that is by the time they are ready for college) be in the A grade. Twenty per cent of pupils are on the border lines between types and it would look as if that many ought to be shifted across each year which would clean up the work in five years.

A few years ago a very thorough piece of work was done in the public schools of one of our large cities to find the relationship (if it exists) between the A, B, C of posture and the A, B, C of scholarship and athletic ability. Posture work had been carried on in these schools intensively, with monthly tests, grading and special daily exercises for more than 12 years. Probably in no public school system has it been done more thoroughly. Very fortunately the results of this posture work were not considered, and apparently not thought of in this study. The classification of pupils posture-wise was made by 45 physical education teachers assisted by grade teachers and principals, and conscious posture was averaged with habitual carriage. 17,984 pupils were tested, or about 1,500 per grade.

In Figure 1 we have the classification by grades and you will note as we go upward the change or lack of change which took place as the result of posture work. From the first to the 12th grades one-half of one child has been shifted each year over the fence from B to A, but unfortunately nearly two children per year fell backward over the line between C and D, while the general shift has been from good and fair to poor or worse. You will note the sudden change at the 7th and 11th grades. It does not seem possible that the posture of children at these ages is really worse and it is probable that

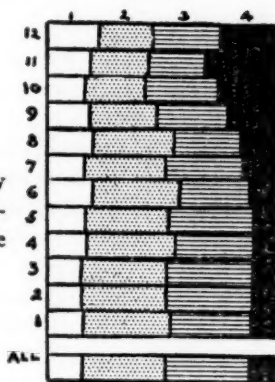


Figure 1.

Classification of about 20,000 children by posture types A, B, C, and D. Graph at bottom represents all children. Above is the classification by school grades.

these sudden shifts are due to the fact that most of the children in junior high schools and all in senior high schools are required to wear gymnasium costumes and ordinary clothes cover a multitude of deformities.

You are probably saying under your breath that although the posture work in these schools may have been done by the most approved classroom methods, better results would have been attained by the personal attention of experts in specially equipped clinics. So one might expect, although I have already stated that in my fifteen years' experience in clinics I have never seen any notable change brought about in posture.

One of our western cities is fortunate, or unfortunate, in having in its public schools a very detailed organization for corrective exercises carried on in special clinics, by trained workers, and with special appliances. The whole work is headed by a physician. Their report recently came to my desk and I searched feverishly for what it might say regarding posture. Only "poor" posture was mentioned in the statistics. In the elementary schools between 9 and 10 per cent of the children at all ages were considered as having this poor posture which figure nearly corresponds with that for the D posture, in the schools of the first city. Whether or not all of the other children are considered as having at least a good posture this is to be inferred. If so it simplifies the posture question and shows again how posture experts disagree.

Sixty-one per cent of the poor postures in elementary school children were corrected in the posture clinics. Now, if my mathematics are not at fault this leaves about 4 per cent with poor posture when they enter junior high schools. One is somewhat shocked therefore to find that of the junior high pupils 20 per cent have poor posture. However, 25 per cent of this 20 per cent have the defect corrected so that at high school age there should not be more than 15 per cent with poor posture.

The posture frog, however, again loses his footing, for in the senior high school 25 per cent are labeled as having poor posture. You will note the close resemblance in this increase in poor posture to that in the first school system mentioned. It may all be due again to change to gymnasium clothing but the significant thing is that no change for the so called better has been brought about by all this elaborate and up-to-date machinery and with all of this waste of time and money.

It is interesting that in the posture classification of students in a university of this same state 22 per cent are placed in the D group.

Certain physical educators say or have said that all that is needed for correction of faults of posture is sufficient, vigorous, general exercise. As you probably know the Public Health Service tried this out on a group of high school boys but without change of carriage.

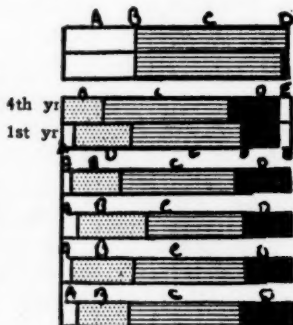
You may ask what all this has to do with the college student. It is but a step from high school to college. Many high school students are of college age and many college students are of high school age.

Figure 2.

Lower graph represents classification of all students of 3 universities. The three graphs next above show the classification of these universities individually.

The next graph shows classification of freshmen (lower) in one university and of the same students in their senior year (upper).

The graphs at the top show the classification of freshmen in another university at the beginning and end of the year.



In Figure 2 we have the same kind of classification of students on entrance in three universities, separate and combined. The continued drift toward the darker side of the picture is, I am sure, not a real one, but a seeming change for the worse due to examination without clothing. This is a picture of college students before and not after correction. But if nothing happens when they are younger how can you expect to do much after entrance to college?

Where the results of corrective work are given by the person in charge of that work one is always suspicious of the figures and to quote from Rip Van Winkle I don't know whether we "ought to count that," but strange to say even such reports are scarce.

I have met with only two reports giving before and after statistics. In one a classification of freshmen was made into 5 groups A, B, C, D, E, D being "bad" and E "very bad." The examination after 4 years (Figure 2) of physical education was made by a different set

of examiners, and classifiers never agree. Certainly, however, the results of the efforts made for changing the type of posture have not been for what we call the better.

In another graph in Figure 2 we have the estimate of the results of special work in posture for one year in a freshman class. Those in charge of this work have evidently not accepted the current classification, for the A group which they consider in no need of changes contains some 35 per cent or about the same as A and B in most college classifications.

One student per hundred has passed from the B to the A, leaving the C group about as it was. We can certainly give the examiners credit for an unbiased report, for they note that some of their B and C students changed for what is considered the worse. We do not know how many A's lapse from their perfection for they were not re-examined.

From such data as I have been able to collect it seems plain that our posture work along the lines popularly indicated comes to naught. It is on a par with our late efforts to make everybody measure alike and weigh alike.

How did we get this way? I think it is due to three things. (1) The unquestionable fact that the human spine is elastic. (2) The fact that under mental and physical depression, fatigue and disease we tend to droop, for the time being at least, from approximation to a vertical line and (3) the fact that in our idealism we mix physique with aesthetics more than is good for us.

We have not given the spine as much credit for elasticity as it really deserves. A child at 12 years can change the curvature of his spine voluntarily sufficiently to cause him to skip a posture grade, but very fortunately for him, he returns immediately to where he belongs. Even at 40 you can easily lift yourself posture wise over the line separating the types but you will not stay there. Anybody who has had intimate acquaintance with bones knows that no two human skeletons are alike, and it is said by those who have studied the subject that an X-ray picture of a spine makes a surer means of identification than a finger print. If this is true of detail it is true in general. Cartilages and ligaments are elastic but we are better built than we think we are or we would make a mess of our physique.

Of course fatigue and depressing emotional states affect carriage to a degree and we usually think for the bad because we then *feel* bad, but on the contrary it is probably for the good, for it means relaxation which we need at the time. It is a means of rest.

As regards the D end of the posture chart which we seem to shun as we would the plague we have the statement of one of our universities to the effect that this "group is widely recognized as the tuberculous type, that these individuals are short winded and tire easily.

They are usually poorly nourished and offer a low resistance to infections of all kinds." There is also the statement about embarrassment of the lungs and heart action, for all of which there is no good foundation. In fact a study in another university showed no such correlations. Even the tuberculous in their early stages, or at any rate those of school age, do not show any effect on posture. I'll confess I did not suppose this was the case, so much does tradition influence one. I was therefore surprised at the results of a classification made by Dr. Gressler, the orthopedist in charge of the Lymanhurst school in Minneapolis. Most of the pupils in this school are tuberculous but it turned out that a larger proportion of those with positive tuberculosis were in the A group than in the D group and all of these children were examined without clothes. It is interesting to note here that the percentage in the D group is about the same as in the three upper grades in the statistics from public schools.

There probably is in every D group about 1 to 2 per cent of students who are there because of deformities due to faults of development, malnutrition in early life, or disease, but when you take these out I do not see that there is any evidence that the D people are worse off than their fellows. At any rate I do not see that by any ordinary means, and without getting into trouble, we can change the D's to A's.

As regarding aesthetics, it would not seem in this jazzy age that it matters at all from this standpoint how we stand or walk or sit. Nevertheless there is a liking at present for a very straight spine just as there is for very red lips and very wavy hair.

Some ten years ago I asked the faculty of a normal school of physical education to point out for me the pupil with the finest posture. There was no hesitation in the choice. The young woman selected had spent a year at another school of the kind and in that school she had also been selected as having the best posture. She was not of the A type but of the A plus type.

Figure 3.

Tracings of back. Two on left—from two athletic girls (sisters) in average health.

Middle and right curves from two Greek statues of athletes.



It was not always so as is indicated by Figure 3 for the graceful

lines of Greek statues are not so vertical. However the old Greeks have been dead a long time.

There is no accounting for tastes. The Arabs desire, in a young woman, that she have the girth of a young camel and girls are fed for the marriage market accordingly. We seem to run at present to the other extreme. Possibly some time the posture scheme will be shifted by the aesthetes and pupils will be taught to strive for the D type of carriage. In fact this has always been the ambition of swaggering athletes and certain self-conscious females.

In the earlier days of posture work in this country a great deal was made of the tilt of the pelvis. If your pelvis was at a certain angle you were all right, if at another you were all wrong. This refinement in carriage building was started I believe by the Swedes and was taken up vigorously by Dr. Eliza Mosher. They taught that if the pelvis was not tipped well forward the abdominal contents spilled down into the bony basin with disastrous consequences, the details of which I will spare you. At the present time the carriage makers have changed their ideas and it is now taught that it is very bad to tip the basin forward.

In contemplating these conflicting theories I feel like using the words of a Florentine ambassador to England in the days of Cromwell. He wrote to his court, "Some say the Protector is dead, some say he is not; for my part I believe neither the one nor the 'tother."

Some years ago I examined a number of children from $2\frac{1}{2}$ to 5 years of age and I found the same postures as are represented in the types we have been discussing. I hoped to be able to follow these children up to college age but I was unable to do so. With the classification that we have from public schools this is hardly necessary. I

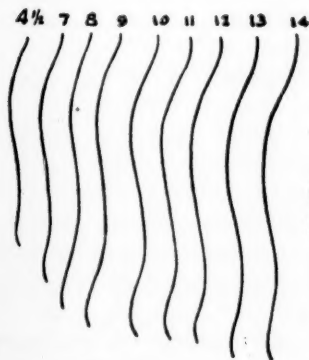


Figure 4.

Tracings of outline of back of one child taken at $4\frac{1}{2}$, 7, 8, 9, 10, 11, 12, 13, and 14 years. The child was facing to the right.

have followed one child however from 4 to 14 years (Figure 4) and despite attendance at school and also severe illness there is no change in carriage. This, and more definite evidence, indicates beyond a

doubt that posture is hereditary, and, except where modified by malnutrition, local disease, accident, prolonged occupational conditions, or the laying on of superfluous fat which pulls things out of their former relations, it remains as in the earliest years.

In this connection I want to give the posture classifiers credit for making an interesting discovery which, however, they did not apply in the right way. There are four types, or forty-five types, but they

Figure 5.

Distribution of average school population as regards posture types. With clothes—continuous line. Without clothes—dotted line. (Each square represents an individual.)

DISTRIBUTION OF POSTURE TESTS
— WITH CLOTHING
... WITHOUT CLOTHING



represent simply the normal distribution (Figure 5) of human spines, and the average or normal spine lies for the present near the line between B and C and not in A. This B-C spine is probably the best for all purposes if there is a best; but while we may envy it, some of us at the A and D ends of the curve of distribution will always be considerably removed from it. It is about the type of carriage preferred by Greek sculptors and may correspond to that of the average Greek of the age of Phidias, though a recent student of the subject says the Greeks were sway backed.

I think we can conclude from all this that (1) there is no evidence whatsoever that posture is essentially influenced, either by general or by special posture exercises.

(2) There is ample evidence that, like all our other features, physical and mental posture is an inherited trait bound up with the complicated physique handed down through millions of years and not to be tampered with lightly for artistic purposes.

(3) Students may be classified according to four or 40 types as regards their general build but the usual law of distribution holds except as it may be affected by injury or disease including occupational stress and strain. The occupation of going to school does not, however, seem to affect it to any degree.

(4) Posture grading has been done almost wholly for aesthetic reasons and it is not unlikely that there is a basis for our aesthetic selection in that we are unconsciously shunning true deformity which is likely to be found at the D end of the posture scale. D stands for Darwinian descent and we may also be unconsciously shunning our simian ancestry but whether we like it or not the resemblance to our source of origin is, for a certain percentage of us, unavoidable.

It is manifestly unfair to seriously compare students as regards

posture types, with the purpose in view of changing that type. It would be just as unfair to classify them as beautiful, plain, homely and ugly. We cannot standardize the human body. There is enough joy taken out of life in other ways than by being told we have a third or fourth rate carriage when, in reality we are only traveling in the family carriage which is a good one even if it is not a handsome one and may carry us for 80 or 90 years. We might as well be told we are not good looking, though of course, most of us are not.

If there is nothing much to posture work when we consider the body as a whole, there is something left when we take into consideration the carriage of the head and shoulders. These are to some degree independent of the general bodily set up and it is possible for a very considerable number of students to improve their appearance by holding the head and neck a little higher and the shoulders a little farther back. There is even statistical proof from at least one college of such change.

That, ordinarily we consider the carriage of the head, more than any other feature of posture, is indicated by the old military types formerly so popular. It is also demonstrated by a recent study of the Maoris, a native people of New Zealand. They have been very much extolled as examples of fine physique and splendid carriage, but Dr. Bakewell remarks of them that the abdomen is more prominent than in white children.

There are no new exercises for improving the carriage of the head, neck and shoulders. What we have are as old as the hills. Animals stretch themselves when they have been in unusual positions. One long stretch answers the purpose. Perhaps if they had to go to school and bend over books day and night they would need to do these exercises more frequently, though hardly rhythmically and by counts.

We should arouse the pride of the student in personal appearance, give him such active or passive exercises as are needed and let it go at that. Aside from this we certainly should do everything to remove such bodily or mental conditions as tend to bring on undue mental or bodily depression. If by the exercises themselves we improve health as well as appearance, well and good. We have killed or rather cured "two birds with one stone."

There is the matter also of true deformities due to disease or accident which we should treat as best we can. When it comes to tampering with the curves of the spine unnecessarily we are getting on barren if not dangerous ground.

We will all have to travel in the family carriage, or at any rate travel in the carriage with which nature has furnished us even if it is not a very artistic vehicle and though it may be worse for many a hard knock in its earlier travels. We should remove dents from the

hood and straighten out bent fenders and make the machine as presentable as possible. After this is done we may still have a model which is not considered the fashion but it will get there just the same.

What is most to the point, if these conclusions be true we can cease fretting over our lack of results from our efforts at trying to radically remodel the human conveyance.

Corrective gymnastics attempt to correct other things besides posture. Do they succeed? I am going to leave this interesting question for Professor Metcalf. I cannot take more time and I want to at least mention restricted exercise. I want to say a word about tuberculosis. Just as we mix aesthetics with physique, considerably more than they will stand mixing, so we often mix immunity and physique much more than is justifiable. Deep breathing exercises have been long recommended both as corrective and as preventive of consumption but with no real ground and I have already indicated that there is no evidence that posture has any relation to the prevention or cure of this disease. But the *restriction* of exercise may have very much to do with both its prevention and outcome.

Time was when vigorous activity was recommended as preventive and curative for tuberculosis. John Keats who was the best boxer in his school and who was devoted to dancing and other physical activities, in his efforts at recovery from consumption tramped 30 miles a day in sun or rain over the Scottish moors. It is no wonder that he grew rapidly worse. We have, or ought to have, more sense nowadays. While there is not much danger that they will ever be great poets, probably 2 per cent of our college freshmen have on entrance, serious signs of tuberculosis. Unfortunately these signs are not on the surface. Defects of posture, feet and everything else pale into insignificance beside these defects in the lungs. These students deserve first place in our attention for in the ages 20 to 24 one-fourth of all deaths are from this dread disease and it continues its slaughter of young manhood and womanhood, in their best years.

I want to express my admiration at the broad view that you college people now take in handling the subject of physical activities. I refer especially to the fact that you do not run all the students through the same concentrated violent dumb bell drill or chest weight mill. You do not make them all play football or tennis but give them a wide range of choice of interesting activities which may be carried on in leisurely fashion, extending over an hour or more. The encouragement should be toward the side of the milder activities. I am not condemning athletics for I always enjoyed them immensely, but from the standpoint of physical health the more violent games have not a leg to stand upon and physically they are of no use in after-school life.

At college age the body is practically finished and its muscles are

as well trained as need be for present day purposes. College physical activities belong to the realm of recreation. It is the prime need in recreation that it should be mind-absorbing. It is but a step, no, it is no step at all, physically from such activities as golf and archery to playing piano or painting a picture (all are mental, and all are physical activities, all are large muscle and all are small muscle activities), and if you are more interested in music (provided it is not jazz) or art (provided it is not too impressionistic) these forms of exercise, under good conditions of hygiene are even more beneficial than golf or archery. Because baseball is at least nine-tenths mind-absorbing we forget that (except for the battery) it is also nine-tenths sitting or standing about. A pipe organist uses his big muscles far more in the same playing time and usually with 100 per cent mental satisfaction.

I quite agree with the recent statement of the Regins' Professor of Medicine of the University of Oxford that "the result to be aimed at in recreation is to have the mind preoccupied with problems entirely different from those associated with the individual's work. These factors are of much greater importance than the physical exercise a game involves, in promoting a state of good health. You may get as much benefit by *watching* a game of golf, if you are interested in watching it, as by playing it, or by reading a book, if you are more interested in books than in golf." While this applies more to adults it applies to many students and all are headed for middle age. The physical director is the director and caretaker of superfluous human energy—according to the amount there is to spare and that amount may be very small.

The student who shows evidence of tubercular infection needs to be warned against the tempting lure of athletic activities, which require the expenditure of large funds of vitality. He may find absorbing interest in archery or golf. Or it may be best for him if he finds most interest only in *watching* others play. Possibly photography or the playing of a musical instrument may be better.

I have now trespassed beyond my allotted time and I have made many heretical statements. In the words of Robert Burton, "I have said things which you will like and surely dislike." I am going to restrict the further exercise of my unruly member, in the hope that possibly you will be lenient and not apply "correction" to me for this first offense.

I will only add that I hope you may all find time to be skeptical of tradition and authority, with reference to the needs for physical activity and regarding the possibilities of standardizing the human form and of molding or remolding it to order.

Relation of the Department of Student Health to the Department of Physical Education

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IT IS very evident that it is not possible to get a perspective of the relationship existing between the Departments of Student Health and Physical Education as we find them organized in our educational institutions today, without giving some consideration to the history of these two movements. In a consideration of these two departments one is confronted with three very definite stages all of which have a bearing on the question under discussion. I refer to Physical Education, Intercollegiate Athletics, and Student Health.

Physical Education was the first to appear. Its history in American colleges and universities goes far back into the last century. It has always been intimately associated with the effort to improve the physical well being of students; as a matter of fact, Physical Education was established primarily as a health measure. Very early in its history in our colleges and universities, it was also recognized that Physical Education could make a very valuable contribution, not only to the health of an individual but also to his social and moral training. I shall endeavor to refrain from speaking of the aims of Physical Education because I have no desire to enter into an academic discussion of this subject. Apparently even the most rabid enthusiast who feels that the aims of Physical Education do not include health, will however admit that one of its functions is to contribute to the organic vigor, recreation, both mental and physical, and the general well being of the individual.

It is well to call to your attention that the first men to hold university and college positions were medically trained: Dr. Hitchcock, Dr. Hartwell, Dr. Sargent, Dr. Arnold, Dr. Leonard, Dr. Goldie, Dr. Gulick, are men whose names are written large in the history of Physical Education. These men have all passed on to their final reward. It is entirely possible that these men were trained in Medicine rather than Physical Education because at that time there were no schools of Physical Education.

There is another group, which has spent more than a quarter of a century in Physical Education and has made notable contributions to this cause: Dr. Anderson, Dr. Storey, Dr. McKenzie, Dr. McCurdy, Dr. Lambeth, Dr. Babbitt, Dr. Phillips, Dr. Naismith, Dr. Wood,

Dr. Meylan, and Dr. Raycroft, are among those in this group, and there are others who have been in the work for many years and who are still in their prime, who hold medical degrees. In fact we have looked to the medically trained men to supply almost all of the leadership in the Physical Education movement up until the last few years.

It is a significant fact that these men all considered it a part of their work to care for and promote the health of the student body. It was this earlier group who first advocated physical and medical examinations and urged that these be repeated yearly. These men were the first to establish tests that might measure physical vigor, and to institute a system of follow-up to see that physical handicaps were corrected wherever possible. It is fair to say that the medical examinations made by the earliest group were not as thorough as those made at the present time, nor was the follow-up work so successful as that which we now find in our leading institutions. It is also fair to say that practicing physicians of their time were not so intelligent in their search for causes of sickness, because the volume of scientific knowledge was very meager compared to that which is now available. Those of us who knew these earlier men would be unwilling to admit that they would not have made use of this new medical knowledge in their work had it been available to them. This group was also the first to organize courses in personal hygiene.

Up until about twenty-five years ago more than 62% of the membership in the College Directors Society held medical degrees. Metcalf reported in 1926 that the number with medical degrees had dropped from 62% to 27% in this society. This change in training was undoubtedly due to the increase in the number of colleges giving courses in Physical Education, and also to the fact that a certain group interested in Physical Education had begun to emphasize to a greater extent its educational values. This minimized the importance of the medical degree in comparison to one in Education for the Physical Director.

A quarter of a century or more ago Intercollegiate Athletics, as we know them today, began to demand attention. This movement swept over the United States, very soon captured public interest, as well as the interest of college and university faculties, and administrations. It soon overshadowed, in many places, the true work of Physical Education; in other institutions it was the fore-runner of a physical training program. Some felt that the intercollegiate athletic movement was a part of Physical Education. Others apparently felt that it replaced it. This led to the organization of two departments in some institutions. In other colleges, both departments were under one head.

In a study of the objectives of intercollegiate sport made by a

committee under the chairmanship of Dr. J. F. Williams, presented in 1926 there is found no direct reference to health as an objective and only indirectly is it mentioned. Whether intercollegiate athletics could be classed as a health movement or not is beside the point in this discussion. The significance of the intercollegiate athletic movement is found in its influence in the training of the Directors of Physical Education, because presidents and Boards of Trustees began to select as heads of departments men who did not have a medical degree, nor a degree in Education, but had received their training very largely on the athletic field. This fact tended still further to lessen the emphasis on Student Health and to put more on the other functions of Physical Education. Metcalf shows in a study presented in 1926 that 86% of the directors of Physical Education in the Directors Society had been varsity athletes, to be sure many of them held the degree of Doctor of Medicine or of Philosophy.

In 1920 a small group of physicians, some of whom had been directly interested in Physical Education for years, organized the American Student Health Association. Some of these men are with us today.

Part of the function of this organization was to further Student Health—a work which in part at least had been done by the early directors, but which had not kept pace with the general physical education and athletic programs. I know full well that Student Health Service is not limited to service to individuals but includes sanitary supervision of the college community as well.

However, I am not at all sure but that the term Student Health is not a misnomer in many institutions. I rather suspect that the department of Student Sickness would better indicate the nature of the work done in the past. Has the lesson been too well learned that is found in a verse of a topical song, which goes:

"There was a doctor by the name of Beck,
Who fell into a well and broke his neck
It served him right as you will own.
He ought to have tended the sick,
And left the well alone."

We now have in many institutions three organizations doing the work that was originally done by a single department.

A student coming into many of our institutions, like all Gaul, may be divided into three parts, a part of him falling to the Student Health group, a part to the department of Physical Education, and another part to Intercollegiate Athletics. These departments may be distinct and without cooperation. Anyone or all may make a real contribution to the welfare of the student. Physical Education began as I have indicated as a health movement and is still vitally concerned with it. The intercollegiate and intramural athletic program may

make a valuable contribution to individual health, and if reports are true, to the financial betterment of a considerable number of men registered in educational institutions. The Student Health movement is primarily interested in the sick student.

In spite of these organizations, all too many students go out from college without securing the benefits that could be gotten because they happen to fall between the groups. In many institutions one fears that these departments are interested in the individual primarily as a student and not as one who is soon to leave the college campus and undertake the responsibility and duties of citizenship. All will agree that the college or university has a responsibility in health matters. The question for discussion is just how this responsibility is to be best exercised. Personally, I would like to outline this responsibility in this way. First, a responsibility to the health of the student while in college. This responsibility is met by providing wholesome environment; by giving a complete medical and physical examination followed by correction so far as possible of all physical handicaps through a follow-up system, which puts such services within the reach of all; by furnishing an opportunity for wholesome physical activities and recreation, which will bring to functional maturity the vital organs of the body, so much needed by the students entering college today, who have too often escaped the valuable experience with the buck saw and chopping block. The responsibility is further met by giving courses in informational hygiene, by caring for and healing the sick, and by employing the necessary preventive measures.

However, I do not believe that a college's responsibility ends here, because I feel that it has a responsibility for the future health of its students after they have left the college, and that it should give real consideration to this fact. This means that whenever a student leaves the institution he should be physically well and free from all remedial handicaps which may ultimately injure his health. Likewise he should have an adequate knowledge of hygiene and the laws of health so that he can intelligently regulate his own health habits and be able to recognize the true and false as it relates to health and sickness. He should have definitely adopted the policy of the annual medical examination. He should also be equipped with a knowledge of and a love for many physical activities and games which will be useful in maintaining his health and furnish means to fill his leisure time. The institutions that see Student Health as a four year problem are well behind the modern conception of this work.

What then is the common practice in the organization of departments of Student Health and Physical Education? To ascertain what is the common practice a questionnaire was sent out to some 115 colleges. In some cases where there is a divided department both the head of the department of Student Health and the Director of Phys-

ical Education answered the questionnaire. Eighty-nine different institutions answered, and in 24 instances two replies were received from a single institution. It is not always an easy matter to tabulate the answers in a questionnaire. This difficulty was emphasized because in 24 institutions where both the Director of Physical Education and the head of the Student Health Service replied, there were often marked disagreements in the answers. Some institutions do not have a department of Student Health, and others do not have a required course in hygiene. An analysis of the answers from the questionnaire indicates that in 57 of the 89 institutions that replied, the departments of Student Health and Physical Education are distinct, 27 are not distinct, and 4 are in doubt as to whether they are distinct or not. In the 57 institutions where these departments are distinct the cooperation seems to be rather close in 24, rather loose in 27, and no cooperation at all in 4. In this group of colleges the staff did work in both departments in 29 instances and in 28 cases the staff did work in only one department. In this group 35 felt that the organization was satisfactory and 20 felt that it was not, and it was frequently intimated that there was friction between the two departments. Very often the comment was offered that the system worked fairly well when the personnel was right. Among this group two replies came from the same institution in 24 instances. In four of these there was a marked difference of opinion as to whether or not the organization was ideal. In this group of 57 institutions with distinct departments, 9 had offices in the same building, 35 were comparatively near, and 10 were at some distance from each other. The required course in hygiene was given in 31 instances by the Physical Education department, in 15 instances by the Student Health department; both departments shared the responsibility in two institutions, while in five instances some other department gave the course. Of the 27 colleges in which the departments were combined, 21 indicated a close cooperation and three a rather loose working agreement between the two divisions. The staff did work in both divisions in 20 instances out of the 27. In answer to the question, "Is the organization ideal?", 21 felt that it was, and five felt that it was not. The offices were in the same building in 11 cases, while 10 were located quite near each other and two were at a greater distance. The required course in hygiene was given in 13 instances by the department of Physical Education and in eight cases by the Student Health division.

One's whole impression is that there was less friction and better cooperation where the two divisions were under one head.

Apparently there are many points of common interest in the departments of Student Health and Physical Education. Both are vitally interested in health. To the department of Physical Education falls the responsibility of providing skilled and intelligent leadership

in forms of physical activity that promotes organic and bodily health, to provide for the correction of defects of posture, and to teach plays and games which have a large carry-over value. The department as such frequently does not assume responsibility for the physical examinations but its work is based largely on the findings of such examinations. Nor does it attempt to treat the sick. It does help in the follow-up work, and it refers cases needing medical attention to the health department.

The Student Health organization is also vitally interested in health although it spends much of its time in work with the sick. It makes the medical examinations. The results in individual cases may or may not be turned over to the department of Physical Education but should be. It is largely responsible for the follow-up work and the correction of remedial defects. It institutes and carries out many preventive measures.

The Student Health department cannot supply the leadership in physical activity, but must refer such cases to the department of Physical Education. The department of Physical Education cannot supply the medical service but must depend upon the department of Student Health to supply it. Either department may be responsible for the instruction in hygiene. It is evident then that we have two departments each of which supplements the other, and neither of which can reach the highest degree of success without the cooperation of the other.

For the individual student the resources of the Student Health department may be the determining factor in his health life. In the case of another student, he may never have occasion to consult the Health department except for his annual medical examinations, but, if he is to enjoy complete health, he will need the offerings of the Physical Education department. Another student may need the combined wisdom of both departments to keep him in condition. Each department then is under obligation to work in the closest harmony with the other. This working agreement should not be a perfunctory or formal one, but should be very close and sympathetic.

I hold no brief for any particular type of organization involving Student Health and Physical Education. I know full well that the type of organization in a University of ten thousand students and more, will vary from that in one of only a few hundred. An organization in an institution that conducts a medical school with a large hospital and clinic easily available, will naturally be different from one that finds it necessary to maintain an infirmary or hospital.

In this discussion we should keep constantly in mind, that it is the staff of the department of Physical Education that is in closest contact with the undergraduate, whose members actually see the student most frequently. This group is in a strategic position to make contact

first with those who need medical attention and who would not go to the college physician (especially if his office is not easily accessible) without pressure being exerted from others.

My experience as a Physical Director, as a college physician, and as a Director of Athletics at various times, and now as all three rolled together, makes me prefer very strongly one organization with two divisions: one of Student Health and another of Physical Education. This position is strengthened by the replies to the questionnaire. I believe that this is advisable because it will work for closer and more sympathetic cooperation, without which the best results cannot be obtained. It will reduce friction to a minimum. It will do away with overlapping of the work of the two departments. It will in the end be of greater benefit to the student while he is in college and after graduation. The title might well be "Health and Physical Education."

It is not so easy to indicate what the type of training should be for the head of this department. Circumstances to a degree must decide this matter. But it is perfectly evident that the director who has a medical training only, and knows nothing about the subject matter and the theories and practice of physical training, may be no better equipped to head this department than the physical director who knows nothing about the theory and practice of medicine. The best type of man would be one trained in both fields, and who has administrative ability as well. This was the leadership in the early days of our country. But with the trend of college administrations to take men trained in neither of these fields, but rather in athletics, and also with the increased demand, the supply of men trained in both fields was insufficient. The second choice would be for a high grade man trained thoroughly in one field but with real experience, knowledge, and sympathy in the other field, and with considerable administrative ability. It would then become necessary to select as an assistant, a person well trained in the other field. It would be fair to say that it would probably be easier to graft on to a medical degree the necessary training in Physical Education, than it would be to add to the degree in Physical Education the necessary training in medicine.

This paper will justify its place on the program only as it arouses intelligent discussion which will be of real service to the committee which is to be appointed to study this whole question.

Problems of Intercollegiate Athletic Administration in a Modern Program of Physical Education

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PROBLEMS in the administration of intercollegiate athletics are like the poor, they are always with us. Problems concerning the character and conduct of athletics are as old as the sports themselves; dating back to the days of ancient Greece. Felton¹ writes that "the wise men of antiquity drew the line firmly between gymnastic exercises on the one hand and the training of athletes on the other. The former they regarded as essential to a sound mind in a sound body; the latter mischievous and immoral."

In distinguishing between physical education and athletics in ancient Sparta in the third century A.D., it is stated by Forbes² that "the monster athleticism swiftly crushed the life out of the ancient system." The Stoics and early Christians scorned the body, and we read in the First Epistle to Timothy "for physical exercise is of little worth. Most insidious and deadly of all was athleticism."

Our literature from pre-puritan days to the present abounds in commendations and condemnations of the administration of games. In the early days there was much concern over "what the world calls play." In the eighties the colleges had turned to athletics with such abandon, we are told, that newspaper cartoonists, who formerly had pictured the hollow-chested undergraduate with fine mind and no muscle, now depicted the undergraduate as a strong-man bereft of all intelligence.

For years the problems in athletics centered around the *character* of the games; today we are concerned about their *conduct*. From coast to coast America finds intercollegiate football in a ferment. The spirit of unrest, even revolt, is in the air. A student publication wants fewer big games; a famous coach says the present drudgery of the game will drive the students from it, another says that football is not emphasized enough from the standpoint of gate receipts; a student editor of one university accuses the players of a rival institution of professionalism; players at a college are debating whether their Alma Mater should accept football defeats or "go after players." A coach has resigned after a season of turmoil and open player-revolt; the

¹ Felton, C. C.—Report of the President of Harvard College, 1859-60. pp. 21-38.

² Forbes, C. A.—Greek Physical Education, Century Co., N.Y. 1929.

alumni of a university want a new and more progressive coaching system, not for the purpose of winning more games, but to develop the available material to its fullest possibilities; a university drops all minor sports and two major activities; several colleges abolished football entirely. Some educators say, abolish gate receipts and the professional coach and "give the game back to the boys."

The football situation in itself requires concreteness of remedy. And it is only one of the many activities which we are trying to include in a modern program of physical education. This whole problem of the relation of intercollegiate athletics to a complete program of physical education is so overwhelming that one hesitates to add to the confusion of voices which now urge for reform.

One prominent athletic official writes as follows: "In my travels I have talked with a good many men in my line of work and have asked each one to suggest what he would do if he could organize an intercollegiate athletic department in a large state university according to his own ideas. All but one of the many men that I talked to started by suggesting means of curtailing football, but very few had any very constructive suggestions to make. We criticize the alumni, the newspapers, and the general public because the members that constitute these various groups habitually accord intercollegiate athletics an emotional rather than a rational treatment. Many of our physical education and athletic men, I am convinced, make the same mistake."

It is clear that a more courageous administration is needed than has hitherto prevailed. Our program must become positive and constructive. Instead of repressing and restricting we must encourage and promote. We need to plan *what to do* rather than *what not to do*.

Most of our problems arise out of the confusions in aims and objectives. Our policies are not always shaped with the welfare of students in mind. We employ coaches, schedule games, give out publicity, and build stadia with our thoughts primarily on the gate receipts. Yet the sole justification for athletics in an educational institution is to make desirable changes in the habits, skills, and attitudes of undergraduates. "To promote a program of activities for all members of a given social group rather than for a limited number chosen for their physical prowess," and "To protect athletics from exploitation for the enjoyment of the spectator or for the athletic reputation or commercial advantage of any institution or organization"—these two statements from the platform of the Women's Division of the National Amateur Athletic Federation summarize most of what can be said for athletics at any age, and for either sex.

Finance:—Our problems, then, are to be solved with the welfare of individual students in mind. Our policies are to be shaped by educational not financial outcomes. Most colleges and universities rely solely, or in part, upon gate receipts from intercollegiate games for the funds to operate their physical education programs, and in

so doing create many difficult problems. This reliance on the "gate" is unfortunate. The falling off of receipts during the past season has compelled several institutions to abandon a large part of their activities. The program built upon football receipts is like the house built upon the sands; when the floods of depression come and the varsity loses its games, the program is due for a fall.

Twenty-five years ago the late President Harper³ inquired as follows: "If the department of physical education, of which athletics is only a division, is worthy to be one of the departments of an institution of higher learning, is it not as deserving of endowment as any other department?" He favored endowing athletics as a part of the physical education program and states that it would reduce costs and would "remove a large measure of that element in college athletics that is now regarded as *illegitimate*." This he believed would lift the cause of physical education to a plane coordinate with that of what he calls intellectual education. About sixteen years ago Professor Savage⁴ wrote that "there is not the slightest reason why a sane athletic system should not be supported by endowment or by a student athletic fee, and athletics run on a carefully prepared budget. The sport itself would then be run on a strictly amateur basis, and most of our evils would die a natural death."

Some educators advocate the complete abolition of gate receipts, decry the increasing expenditures on physical education programs, and at the same time demand one hundred per cent participation. Their suggestions appear to be more the result of "wishful thinking than of thoughtful wishing." Just in proportion as we are successful in extending the activity program, so the amount of the physical education budget will increase. Departments should be judged not so much by the total expenditures, as by the cost per student-hour of participation.

Abolition of all gate receipts seems too revolutionary to be practical at this time. On the other hand, the present order of things has given rise to machinery which has grown increasingly complex. It costs more to distribute the tickets for one big football game than many colleges pay for their entire secretarial force in a year. The receipts from one big game would pay the entire annual budget of several colleges. Large football incomes give rise to demands for larger squads, more equipment, more assistant coaches, and an increasing number of intersectional games. Then follows higher-powered publicity, and greater student migrations. How sweeping and complex can this situation become and be educational? We have been taught as one of the basic principles of economics that great size is not ne-

³ Harper, W. R.—*Shall College Athletics Be Endowed? Trends in Higher Education*, University of Chicago Press, Chicago, 1903, pp. 276-284.

⁴ Savage, C. W.—"The Professional vs. the Educational in College Athletics" *Proceedings, N.C.A.A.* 1914, pp. 52-59.

cessarily evil. Mergers are believed to result in great savings. On the other hand, Giant Power is rapidly becoming a national problem. Athletic administrators will tell you confidentially that they are concerned over the size of this business of athletics—the thing is getting too big. Some reformers would “electrocute” the Giant because of its size. They would meet our department store up-keep with a peanut stand business.

It is clear that the emphasis must shift from *exhibition* to *education*. It is not a question of abolition or prohibition but one of regulation and temperance.

The best solution would seem to be the one proposed years ago. Directors of physical education should work with presidents and trustees to place the whole program on a budget basis supported by students' fees, appropriations from trustees, and gifts which have no strings attached. Gate receipts should be only incidental. We think nothing of charging a laboratory fee in the sciences; why should we hesitate to charge the fee necessary to carry on a rational program of physical education? The plan is feasible in colleges and the compulsory fee has been used to a limited extent in tax supported universities. With sufficient funds available to promote a minimum program the main show could go on regardless of receipts from the so-called sideshow. When our colleges and universities pay off the debts on their athletic plants a marked diminution of that financial pressure which is reflected in straining for gate receipts will surely follow. There are already signs of such a trend.

Publicity vs. A Public Relations Program:—This enormous business in athletics has led to the problem of publicity. The policy of paying sport writers for sport stories is one of the most pernicious practices in college athletics. We have not yet learned how to protect our athletes from the white light of publicity.

Public school administrators have discarded the word publicity. It has a bad connotation. It savors of propaganda, news, press agents. In its place they have substituted a public relations program—an organized factual informational service for the purpose of keeping the public informed of the educational program. These school men learned long ago that adequate school support cannot be obtained in one out of a hundred situations without a campaign of education. They do not depend wholly upon the newspapers. Actual demonstrations of school work, student publications, prominent speakers, civic organizations, annual reports, are all means of bringing the public schools to the people.

Administrators in physical education must devise a definite plan for keeping the public informed as to their objectives and activities. This is especially important if we are to include athletics in a physical education program. Proceedings of our national organizations seldom

get beyond their membership. Our aims and objectives are unknown to most faculty members, administrators, alumni, and the general public. Even our students report to the physical education classes week after week without ever knowing what it is all about. Not a word do we say about the aims back of this great movement. There are no notes, no books, and no lectures. And these students are the future alumni. History, English and science students learn something of the implications of their subject. We have used effectively every agency at our command to develop an interest in our intercollegiate games. At the same time our efforts in selling the broader program have been rather feeble. As a result of this one-sided publicity intense rivalries have been built up, and too frequently suspicion, disrespect, and even hatreds have developed where the spirit of mutual friendliness and respect should prevail. At the present time some two dozen of our leading institutions have broken off natural athletic rivalries of long standing because of misunderstandings. A director of physical education in one of our large state universities recently stated that one of his greatest problems was the poor sportsmanship exhibited by spectators, especially at basketball games. Many of our alumni still believe that a patriot must be a partisan. According to Bulletin 23 of the Carnegie Foundation,⁶ "It is certain that without the help of the American newspapers, little if any improvement is possible in college athletics." Can we not use to better advantage than we have in the past our convocations, civic organizations, student publications, alumni bulletins, photographs, news stories, advertising, and annual reports? Without some concrete plan of informational service we cannot expect the public to know all that we claim for physical education.

It is my opinion that this Society should outline for its membership a definite program of public relations.

Institutional Control:—If we are to consider athletics as a part of physical education, institutional control and central responsibility must follow. From the literature on the subject it would seem that educators are in general agreement on this matter. There is evidence⁷ that our programs in approximately sixty-five per cent of the institutions of higher learning are under faculty control, at least in name, but the Carnegie Foundation⁷ found a wide divergence between the control that faculties are *supposed* to exert and the control which they *actually do* exert. Some directors of athletics have changed their title to that of director of physical education without any real vision of the program in its broader aspects. It seems clear that athletics should be considered as a specialized phase of physical educa-

⁶ Carnegie Foundation for the Advancement of Teaching. American College Athletics. Bulletin 23, 1929, p. 284.

⁷ Nicholson, F. W.—"Report of the Commission on College Athletics." Association of American Colleges Bulletin 3; Vol. XI. May, 1925. p. 183.

⁸ Op. Cit. p. 77.

tion^{*}—the latter organized as a separate department or as a division of the School of Education, and all administered by one man with the aid of an advisory committee without power or with very restricted power. This committee may have representatives from the students and alumni but it should be made up largely of faculty. Such a committee is useful as a source of advice regarding the larger policies of the department but it is doubtful whether it is necessary or desirable to grant full control of our activities to a group untrained in our field. Now that athletics are viewed as a part of physical education, limitations are placed on their conduct to the end that educational outcomes will be served. Thus limited, it is clear that our program is not suited to alumni direction, supervision, or control. As a general rule alumni members of our athletic committees are interested only in the athletic side of the program. They are not greatly concerned about the welfare of individual athletes; they care less about the novice in the required classes.

Students should be represented on advisory committees but the idea that they should be given full control of athletics arises in the minds of those who still view athletics as extra-curricular and separate and distinct from a program of physical education. If the time ever comes when we place our history and science in the hands of students there will still be time enough to give them full control of physical education.

This does not mean that students should be deprived of all opportunities for the development of leadership. Such opportunities are offered in a well organized student-manager system which does not require the great amount of time or financial responsibility demanded of students in the past.

One director has recently asked how he can change an athletic committee composed of three faculty, three alumni, and three students to an advisory committee made up largely of faculty members, without starting a revolution. It is a matter of education beginning with the president and trustees.

The Training of Coaches:—If athletics are to be organized and conducted as a part of the physical education program it is obvious that administrators must select coaches who are physical educators. It is a fact that many coaches know little and care less about the required and intramural activities. Certain of our members raise the following questions: "Is it possible to secure active participation in physical education classes by the head coaches in the major sports?" "Will the average head coach, who has devoted a considerable part of the year to intensive training of high grade athletes, take an interest in students less favored? If not, is it possible to combine a de-

^{*} Williams, J. F. and Hughes, W. L.—*Athletics in Education*. W. B. Saunders & Co., Philadelphia, 1930. pp. 108, 138.

partment of physical education and inter-collegiate athletics, except in name?" "The theory is that all coaches should be graduates of schools of physical education and teach physical education in addition to their coaching. But from the practical standpoint this is a very difficult situation to bring about." Some directors question whether coaches should be asked to do anything else during the season they are coaching a major sport. One administrator states that "it is necessary to teach the coaches before they can teach the students." He further adds that he "much prefers a good student-assistant to a coach insofar as the teaching of an activity program goes."

College directors, partly because of limited funds, are demanding coaches with broader training. It is becoming more difficult each year to place the men with a limited training. The younger coaches are beginning to see the "handwriting on the wall" and are availing themselves of the opportunity to attend schools of physical education. This does not mean that they will be poorer coaches,—it does mean that they will be better physical educators.

It is only natural that coaches are more interested in major sports than in required activities. The criterion of success for them has been the quality of their teams. The fault lies, not with the coach, but in the system. This matter will correct itself when administrators succeed in shifting some of the public interest from the varsity teams to other activities of the department. It is the opinion of the writer that coaches should teach in required or elective classes and in teacher training courses. The teaching load should be limited considerably, however, during the season they are head coach. It is a mistake to assign one man as head coach in two successive major sports. The strain is too great and his interest in the remainder of the program is deadened. Ideally each member of the staff should coach one sport, assist in coaching one or more sports, teach required and teacher training classes, and assist in the intramural activities. In this way he will come in contact with athletes, major students, novices in the regular or elective classes, and the intramural participants.

In recent years we have been greatly concerned about making coaches faculty members, but we have overlooked the question of whether or not they are willing to assume the responsibility that goes with faculty rank. Some individuals abuse the position after they attain it by failing to adjust either academically or socially to the faculty group.

Participation:—The problem of participation, though not new, is still unsolved. There is still pressure upon students to give more time to intercollegiate athletics than they or their advisors consider wise or reasonable. We doubtless can agree that "athletics should never demand more than the able student interested in all aspects of fine living is willing to give."

* Williams, J. F. and Hughes, W. L.—*Athletics in Education*. W. B. Saunders & Co., Philadelphia, 1930. p. 47.

With this in mind various plans have been proposed; the class-team, and the double or multiple-team plan; the one-year, and the two-year plan; the four-game, and even the one-game plan.

Some of these proposals seem too radical to be practical just now. However, the two-year plan has been recommended by the National Collegiate Athletic Association and should be given a trial by some conference. This proposal is important in the integration of athletics and physical education in that it will allow sophomores or seniors more time to acquire skills in "carry-over" sports.

And has there ever been any sound reasons advanced for an eight game schedule in football or a sixteen game schedule in basketball? All schedules could be gradually and materially reduced without losing any of the values of these contests.

The abolition of pre-season practice would further reduce the emphasis on participation. Some coaches insist that their boys enjoy spring football. But shouldn't they be taught to enjoy other sports? Other coaches maintain that they call out only those boys who are not participating in some other activity? But why are they not participating in some other activity? Still other coaches state that two weeks practice will do no harm. Neither will it be of great value, because of the difficulty in conditioning players for much football in so short a time.

Then comes the question as to whether or not we will *require* our varsity athletes to learn two or three "carry-over" sports. We can be sure that it is at least our responsibility to provide the opportunity to participate in these activities.

The whole collegiate distinction between major and minor sports is based upon public interest and tradition rather than upon educational values. The major sports may still be justified by their contribution to the immediate development of college men but there is a trend to elevate the minor activities to equal prominence. Some institutions have already dropped the major and minor distinctions and are conducting them on an equal basis.

Now come other questions. Is it possible and desirable to interest large groups of men in minor sports without yielding to a request on the part of the better players for intercollegiate teams in these activities? Can interest be maintained in golf, for instance, without going into the intercollegiate side of it? The answer in both cases is, yes, if facilities are easily available.

Eligibility:—The principle of the integration of sports with education, I believe, will eventually change our whole notion about eligibility. This integration will mean the placement of sports on an entirely different basis than the one which now exists. It will mean the

gradual abolition of eligibility rules so that all students, except freshmen, who are candidates for degrees will be considered eligible and entitled to participate in all activities of the college. Stanford University and Amherst College have recently tried this experiment. President Pease of Amherst, in tracing the history of the problem says:¹⁰ "Eligibility requirements were originally a frank admission that there were boys in college who were not really college material. In recent years the general requirements at Amherst have been raised sufficiently so that we now feel that if a man is fit enough to maintain himself in college, he is fit to participate in sports."

There is evidence¹¹ that so-called extra-curricular activities are more valuable in predicting success in life than are the present curricular subjects. Good reasons seem to be wanting as to why students in athletics, curricular or extra-curricular, should be penalized for difficulties in academic subjects, granted that athletics are conducted as an educational agency. Such a policy would require less exorbitant demands on the time of students, high scholarship standards, and a mutual confidence and trust on the part of rival institutions.

Other Problems:—There has been no attempt here to exhaust the list of problems in the administration of athletics in a modern program of physical education. Many others might well be raised. How can the colleges so distribute the use of facilities that neither the intercollegiate nor the required activities will be too greatly handicapped? Are inter-sectional games justifiable if limited to one in a student generation? Is it desirable to place the disposition of scholarships for worthy students in the hands of a Dean, who shall award them to needy students regardless of sex, special ability, or special interest? How long will the colleges consent to be the sacrificial goat on the altar of the universities' gridiron greatness?

In conclusion, it seems that if the athletic tail is wagging the physical education dog the remedy lies in greater activity on the part of the dog. If we are really to integrate inter-collegiate athletics and physical education we will need the help of this Society in determining more definite objectives and in outlining ideal programs for different types of colleges and universities. However, such programs can be worked out only through the cooperation of all men in the field, whatever their present title may be—coach, graduate manager, director of athletics, or director of physical education. It would seem advisable for this group to take a definite stand regarding inter-collegiate athletics and their place in a modern program of physical education.

¹⁰ Pease, A. S.—New York Times, December 28, 1930.

¹¹ Thornhill, R. E. & Landis, C.—Extra-curricular Activities. School and Society, 1928; 28. pp. 117-120.

Some Physical Aspects of Neuro-Muscular Control

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DURING recent years the marked advances in physiological chemistry have given a good beginning towards the understanding of certain cytological changes in muscle metabolism.

It is a matter of clinical experience that judicious use or practice and conditioning or training improves the functioning power of muscles. This gain is doubtless due in a large part to a changing chemical condition which physiologists explain by such aspects as more available energy, increased inosite, added hemoglobin storage, better utilization of various substances stored in the cells or supplied by the blood, a richer supply of buffer salts, more efficient re-synthesis of katabolic by-products into combustible sugar, a richer supply of catalase, a higher percentage of epinephrine so markedly increased by emotional states, and other related conditions.

The entrancing interest in this chemical problem has tended to monopolize attention, sometimes to the neglect of the simpler and more elementary physical aspects of neuro-muscular efficiency. It seems that granting the essential chemical nature of producing energy, the *utilization* or *application* of this to problems of overt activity seems to be almost entirely a matter of mechanics.

An inexperienced axe man may hack away using twenty vigorous strokes and accomplish less towards felling a tree or chopping a log than a woodsman with fewer strokes and the expenditure of much less energy. The control of the energy expended is the explanation. A person learning to skate may in struggling a distance of fifty yards expend more effort than an expert would in going several times that distance. A linesman weighing two hundred pounds and having great explosive strength may be less effective than another candidate weighing one hundred and sixty pounds and showing a lower strength test, but who knows how to apply the energy he expends. The swimmer well developed muscularly and with a splendid heart but lacking skill in the water fatigues readily, while his weaker companion, who knows how to use the energy he is expending, swims along-side without distress.

These are but samples of dozens of cases where the problem is primarily physical or mechanical rather than chemical. One who has the skill or knack in any given performance works easily, delivers a greater percentage of expended energy into desired mechanical work,

wastes less in useless effort, shows more precision and grace; in short, is more efficient. Of the many references in literature to skill versus strength, mention may be made of the advice given by Nestor to his son who is about to enter the chariot race on the occasion of the games in celebration of the death of Patroclus.

"My son! though youthful ardor fire thy breast,
The gods have loved thee, and with arts have blessed,
Neptune and Jove on thee conferr'd the skill
Swift round the goal to turn the flying wheel.
To guide thy conduct little precept needs;
But slow, and past their vigor, are my steeds.
Fear not thy rivals, though for swiftness known;
Compare those rivals' judgment and thy own:
It is not strength, but art obtains the prize,
And to be swift is less than to be wise.
'Tis more by art than force of numerous strokes
The dexterous woodman shapes the stubborn oaks;
By art the pilot, through the boiling deep
And howling tempest, steers the fearless ship;
And 'tis the artist wins the glorious course;
Not those who trust in chariots and in horse."

The application of this mechanical feature of energy expenditure may be the more apparent by confining the present consideration mainly to those skeletal muscles employed in maintaining position or producing action in the arms or legs, either in relation to the trunk or within the various parts of the limbs themselves.

The rigid bones which constitute the levers controlled by the muscles are so articulated that those adjacent to each other form joints, of which the hinge, ball and socket and sliding are the most representative types. The direction and range of joint movements are limited by (a) the shape and structure of the bones themselves, and (b) the ligaments which connect and surround the articulating portion of the bones, aiding in keeping them together. These tissues however are largely passive in their function, intended not for producing action but in safeguarding the joint from over action. Doubtless muscles attached to articulating bones also contribute their share towards maintaining the integrity of the joints. But so far as changing the relative positions of contiguous bones or maintaining a stated relation, especially short of full normal range, the muscles are the active agencies. Examples of these are the elbow joint which, upon full normal extension, locks and cannot be forced further without injury to the tissues involved, and the knee joint which in supporting the weight of a standing human over-extends and locks, so that the very weight it supports holds the joint in position thereby relieving the muscles. A smart blow at the back of the knee will throw it off center forward and the body will drop until the muscles extending the knee joint can contract and prevent further flexion.

When a muscle contracts it thickens in cross section and shortens its length, thereby changing the distance and relation between the bones to which the ends of the muscle are attached. In this connection it may be noted that the tendinous attachments of muscles to bones are commonly differentiated into the "origin" referring to the attachment on the less movable bone and the "insertion" which refers to the attachment on the bone commonly having the wider range of movement.

It may be noted further that muscles exert their influence by *pulling*—they cannot *push*—they are strings rather than rods. What is meant by the expression "push-off" at the start of a race on the track or a turn in the tank is that the foot is extended by the "pull" of the soleus-gastrocnemius group in the calf of the leg. The "push" given the shot put before it is delivered is accomplished by the "pulling" of the humerus upward and forward and by the further "pulling" of the muscles which straighten elbow and wrist. In view of the foregoing it is obvious that to produce movements in different directions the "pulling" muscles must be differently related to the joints. So they are commonly arranged in opposing pairs or groups known as "antagonists," the one pulling against the other, for example, flexors vs. extensors, adductors vs. abductors, and supinators vs. pronators.

But skeletal muscles do not of themselves initiate contraction or pull. They are subject to orders in the form of stimulation along the supplying nerves. So, the problem of holding position or producing movement is necessarily referred back to the efferent nerve system as the controlling factor, and hence the term neuro-muscular control.

It will simplify the present consideration if reflexes are in the main eliminated and the attention centered on voluntarily directed efforts.

So complex are these neural controls that complete analysis is impossible within the limits of the present paper, but there are at least three physical aspects of efferent voluntary stimulation which seem to merit attention, namely, 1. The direction of the outgoing stimulus; 2. The strength or perhaps better the relative strength; and 3. The relation of such stimulations from the standpoint of time, called briefly "timing."

1. DIRECTION

It is evident from the above brief review that muscles called into function are those stimulated by neural impulses or, in other words, by the specific nerve fibres along which the efferent stimulation is directed; and it is further obvious that any muscle or group of muscles stimulated but not contributing to the desired result, is an indication of misdirected stimulation.

It is true that at times it is desired to expend a good deal of energy without producing motion, and so there are various types of so-called "tensing" exercises. Tensing consists essentially in stimulating both of the antagonists and may result in maintaining a fixed position. For example, with the arm held sideways at shoulder level, the effort may be made to flex the elbow joint but an equal stimulation sent to the elbow extensors neutralizes the flexing forces, with the result that a large amount of energy may be expended without appreciable movement in any direction. Some have advocated this principle as a means of securing development without apparatus, uniform or special location. It may be done almost anywhere, on the train, walking on the street, in the office chair, or even the church pew without attracting much attention from those nearby.

There are however many situations in which this static contraction for short periods of time becomes of great value in connection with the performance of athletic and other exercises. Thus in dashes on the track and in the tank, it is customary to temporarily suspend respiration, holding the chest and in fact the entire trunk rigid so that there may be a stable foundation or basis from which the legs and arm muscles may function.

In all attitudes other than the prone or support position, balance is maintained by controlled stimulation of antagonistic muscle groups and adjustments in balance are made in anticipation of succeeding action. A squad in tactics standing at attention is given the preparatory command "Forward!"—there is at once a forward inclination of the trunks, and unless the executory command "March!" follows within a reasonable time, many will find it necessary to take a step in order to prevent falling. Held rigidly for a considerable time, the exaggerated military position of attention is decidedly fatiguing; even experienced soldiers begin to sway in the attempt to shift the tenseness to different groups of muscles. In extreme cases falling out of ranks or even fainting may result.

Who has not experienced the surprise and even physical jolt of discovering that there was one step more or less than expected in the flight of stairs he was descending? Anyone who has watched inexperienced men learning to play soccer realizes that there are many unaccustomed movements or positions so that a person's balance is difficult to maintain, and the wild and even dangerous flinging of the arms is but an attempt to bring into play accessory parts to compensate for the failure to adjust by the use of the large trunk muscles, which is the method used by those who have learned how to anticipate.

This fundamental control of balance has always been regarded as an important aspect of control. Interest in it is being revived and emphasized by the fundamental skill test on the balance beam used by

Dr. McCurdy at Springfield. The Swedish system used the reducing of the size of the base of support as one of the means of securing progression. Thus from the "stride stand" position the feet are brought together as in the military position of attention. Then came the "close stand" position in which the angle between the feet was closed and they became parallel and finally the "close walk stand" in which one foot is placed directly in front of the other with their long axes in line. This gives a narrowing base laterally, and from these various degrees of unstable equilibrium, positions and movements were required.

Let one more illustration of the utilization of the tensing principle suffice, namely, the holding of the arm rigid with the elbow flexed during the pull of the crawl stroke. Regarding the arm thus used as a lever of the third class, the fulcrum is the end of the humerus attached in the glenoid, the point of application of power is the attachment of the pulling muscles (e.g. latissimus dorsi), while the heel of the hand may be regarded as near the mean point of resistance. Now in a given individual the length of the lever between the fulcrum and the power is fixed but the length of the arm between the power and the weight may be shortened by flexing the elbow. The problem is to find the degree of flexion which gives the swimmer the greatest mechanical advantage.

Because levers of this class are designed for speed rather than power, it is found that by flexing the elbow joint to an angle of about 120 degrees, thereby shortening the distance from the head of the humerus to the heel of the hand by about seven to nine inches, there appears to be the best adjustment between power and speed. This type of contraction would soon become very fatiguing but for the fact that during the recovery portion of the stroke the rigidity is not maintained. Perhaps the relaxing of the forearm and hand in the high elbow type of return stroke is one reason for its popularity.

In addition to this tensing aspect it is evident that if, by poorly directed stimulation, muscles unrelated to the desired result are called into action, there is manifestly a waste of energy. A child learning to write may accompany his effort by a series of facial contortions which do not in any way contribute to the control of the hand. On the other hand it is fair to assume that the elaborate contortions indulged in by a pitcher in his wind-up when the bases are empty, bears some useful relation to his control of the delivery. In industry a great many moving pictures have been taken, for example by the Gilbreths, and later studied, which show useless movements; and by an analysis of the essential motions in connection with a given operation, gains in efficiency reaching to 20% and more have been secured. As yet only a beginning has been made of the analysis of mechanical performance in physical education. When more complete studies give

more definite information, far reaching results may fairly be expected. It is quite probable that a large factor in the breaking of records is fairly attributable to the mechanics of the application of energy.

The controlled outgoing stimulation often determines whether or not the resulting movement of a part contributes to or interferes with the total purpose. Thus in running, the arms swung parallel with the direction of progress favors speed, but if swung across the median line of the body, they certainly lengthen the time necessary to reach the tape.

Cureton has demonstrated that the pull of the crawl stroke, if carried approximately twenty degrees inside or outside of the median line of the body, results in a loss of propulsive power amounting to about 20%. The reason of course is that in resolving the total force applied into its component parts, this pull away from the center of the body imparts a lateral rather than a purely supporting and propulsive influence.

But in many and probably the majority of cases the secret of mechanical efficiency lies in so directing nerve impulses that antagonistic muscle groups do not oppose each other. If for example, a flexion with the force of one hundred pounds is desired, there will always be a certain amount of friction in the joint, and according to Hill, viscous friction in the muscle itself, together with inertia to be overcome before the actual power resultant may be secured. Now suppose that in addition to this a misdirected twenty pound stimulus reaches the opposing extensor group. It is evident that to neutralize this there must also be an additional and equal stimulation to the flexors or an actual waste of forty pounds of energy.

The person who is neuro-muscularly educated has learned to relax (that is not stimulate) muscles opposing any movement that is being ordered. This principle of relaxing has received considerable attention but probably not as much as it deserves. Muscle tone refers to the extent to which muscles not supposed to be actively at work are still functioning. The well conditioned muscle when at rest should be soft and pliable—not tense. This ability to relax when opportunity presents itself is one of the secrets of conservation of energy, even of endurance, and is very definitely related to the directional distribution of nerve impulse. The cat stretched comfortably before the fireplace gives a good picture of relaxation, yet when called into function its muscles are highly efficient.

One area in which the directional control of outgoing nerve stimuli is exercised is the finer coordination of the hand and fingers. These smaller and closely related muscles require a nicety of directed stimulation to produce the isolated and precise response involved in the skill and dexterity manifested. It seems that the precision of this control is usually secured and retained only by continuous and ardu-

ous practice. Fine penmanship, sleight of hand, typewriting, and the playing of certain musical instruments represent these skills. It is said of Paderewski that he can notice in himself the result of going one day without practice that music critics could detect less exquisite technique resulting from two days without practice, and that three consecutive days without practice will enable the discriminating public to detect a difference in his execution. In even the larger muscles of the arms the same thing is true. The baseball pitcher, the tennis player, the "Golfiac" and others obtaining a high degree of skill must pay the price through a long series of attempts, and must maintain with practice their expertness.

Some seem to have naturally a high degree of fine direction. Let this be illustrated by the control of the individual fingers or of the different joints in each finger in free hand movements. Some can while holding the hand with the fingers extended, move the tip of the first finger towards the thumb or move the fourth finger away from the third without disturbing the positions of the second and third fingers, or they may move fingers one and two towards the thumb while numbers three and four swing in the opposite direction. Further, some may flex the first and second joints of any finger without the spread-over of the movement to any other joint. These results represent extremely fine and localized directing of the causal nerve stimuli.

Exactly what takes place in the nervous system as the power to localize stimulation increases? Is there a structural or physical change or can it be accounted for on purely a chemical basis? Physiologists and anatomists are not agreed. Some suggest the possibility of the extension of the myelin sheath to the finer nerve fibres, thereby providing an insulation which prevents the jumping across or short circuiting to other fibres of the nerve impulse, and so guaranteeing that a stimulation intended for a specific muscle group will arrive at its assigned destination without influencing any other muscles. Other authorities reject this explanation, but as yet the complete situation is not understood.

Of course the supreme example of neuro-muscular control is in the human organs of speech and song, where these reach a degree of perfection well nigh transcending human understanding.

2. STRENGTH

But granting that there is no misdirection of impulse, there may still be a poor application of energy if more is expended than is necessary for the performance of any given piece of work. This actually happens in much if not all of the ordinary work and play in life; for example, lifting a chair or even a book, walking or running a given distance, climbing a flight of stairs or a mountain, jumping

over a ditch or water puddle. There is a marked tendency to over-stimulation. Frequently this means a subsequent counter-stimulation to overcome the resultant movement.

In adapting to a new situation before the actual needs are learned, probably everyone falls into the error of over-effort. Watch a novice trying to ride a bicycle. If he feels that he is swerving or falling to the right, he will lean or steer in the opposite direction, but instead of merely correcting he will over-do with the result that a counter-corrective is required. Thus he zigzags along the road, possibly dissipating as much energy as is actually used to promote progress. The stimulation has been properly directed but has not been adapted to the needs of the situation.

Of course in short acts the effect is not marked but in sustained effort the cumulative result has a decided effect on performing ability; for example, in a rowing race, a marathon run or a day's hike. Whenever there results from any given exercise any marked degree of fatigue, the question may fairly be raised as to whether or not the total stimulations have not resulted in a greater energy expenditure than the tissues involved are ready to deliver.

The nature of fatigue in long continued exertion is of peculiar interest from the present point of view. Two distinct types of fatigue are recognized: the one, *immediate fatigue*, in which the performance is actually interrupted or even stopped, sometimes within a relatively short time (for example, vigorous and rapid flexion and extension of the fingers for one minute will force a slowing down of the rate, cause some pain or even result in the inability to continue); the other, *remote or consecutive fatigue*, resulting in soreness or lameness, which frequently has its onset delayed for hours after the exercise which causes it has been discontinued.

The former or immediate type of fatigue is believed to be caused by chemical changes resulting from the accumulation of katabolic by-products. Upon cessation of the effort recovery is relatively rapid, often a few minutes only being required to restore good working conditions. Lamb has shown that recovery in such cases is hastened by appropriate massage or electrical treatment. The explanation is that an enriched blood supply soon restores the chemical condition favorable to further function. The exact nature of these chemical changes lies beyond the scope of the present paper.

In remote or consecutive fatigue, on the other hand, the causal condition is believed to be primarily physical and may be briefly outlined as follows. In a striated muscle fibre the side view presents a series of disk formations arranged like a rouleau of coins. Those in the belly or contractile portion of the muscle receive the stimulus from the end plates of the nerves and respond by expanding laterally, that is by enlarging their diameters. At the same time they become

thinner, this cumulative change resulting in an increase of the cross section of the muscle and a shortening of the length in the contractile fibres. But this very shortening is accomplished by a tendency to tear apart these striae which by their lateral expansion tend to pull away from those nearer the end of the fibre, and thus is produced minute lesions or wounds between the disks. In case of the total stimulation being more than is wise, minute ruptures will actually occur between these contracting units. This may not interfere seriously with their ability to continue functioning, but when contraction ceases and the fibres are allowed to rest, the healing process begins, and when this has advanced somewhat, soreness or lameness results. It should be noted that in this case of over-stimulation it is not necessary that any given impulse be particularly over strong, but that the too frequent repetition within a given length of time has caused the damage.

It is possible, however, and not unknown in the experience of those who have been for any time associated with physical education, to have a single stimulus so strong that it may cause a severe rupture in a contracting muscle group, which may result immediately in the inability to function. In athletic phraseology this is loosely termed a "pulled ligament." It generally occurs at such time as the start of a race, with special effort made to spurt near the tape, or in some other situation where there is high resistance opposing the contractile effort. In some cases the tendon, which is the combined extension of the muscle sheaths (sarcolemmae), may actually be torn away from its attachment or may carry off a chip of the bone, but in other cases there is an actual rupture in the muscle fibres themselves. Whatever be the specific situation in a given case, the damage has been due to a stimulation so strong that in the attempt on the part of the muscle to respond, the damage has resulted.

The "all-or-none" theory of neuro-muscular stimulation and response elaborated by Lucas, Stiles and others and so beautifully demonstrated photographically by Pratt, claims that so far as a given muscle fibre is concerned it will contract with its full force independently of the strength of the stimulus. The total strength of a given contraction will then be related to the number of fibres participating. This has led to some questions as to how a group of fibres could rupture. The explanation offered is clearly in the strain placed on practically all of the fibres in a given group of muscles under very strong stimulus against a very heavy load.

One more aspect of this phase may be mentioned, namely, the relative strength of stimulation sent to antagonistic muscle groups working simultaneously. In pitching a straight ball the effort may result in swinging the ball to the left of a given objective. By repeated trials the fine adjustment necessary to carry it in its desired

course may be reached. Probably the same muscle groups are used but those muscles (whatever they may be) which tended to swing the ball to the left were in the first attempt stimulated too strongly in relation to those which would so direct the arm as to send the ball to the right.

Referring to the illustration of the novice with the axe, may it not be that apart from the force of the blow, the control of the direction of the blow so that it would or would not fall in the desired place is primarily a matter of the strength of the stimulus sent to the opposing muscle groups.

3. TIMING

Practically every physical activity however simple it may appear becomes upon analysis decidedly complex, so that it appears necessary in addition to the two above aspects to include a third, namely, that of timing. This may for convenience be divided into three sections, namely, sequence, synchronization and rhythm. Under sequence will be considered the order in time in which various movements follow each other.

There are positions and movements which mechanically favor or oppose those which may succeed them. Take for example the shoulder roll and snap-up to the feet. There is an instant when the various parts of the body are in a position from which the rapid extension of the thighs (aided by other efforts) enables one to lift the center of gravity over the point of support and attain the standing position. If this effort be attempted too soon in the roll, the victim will lift but drop back to the mat on his shoulders, and if too late the return to the mat will be on the back, the sacrum, or buttocks. A more complex movement—the upstart on the horizontal bar—requires a timing even finer than the shoulder spring. Granted that the positions are perfect, the backward swing gives a constantly changing relation of the center of gravity to the bar, and unless the pull of the arms and the “kip” come when this relation is just right, the attempt will probably result in failure.

In putting the shot there is nice time sequence of the forward spring across the ring, the rotation of the body, and the “push” of the arm. If these do not follow each other so as to give an acceleration of speed to the shot up to the instant it is delivered, there is serious error in the mechanics of the form.

Other familiar illustrations will occur to everyone in connection with athletic events, especially those in which raising some object or the body itself against gravity constitutes the chief mechanical problem, e.g., the hammer or javelin throw, high jump, or, most complex of all, the pole vault.

One significant aspect of the relation of time application is when

during a given movement it is of highest value to exert the greatest effort. This is illustrated in such cases as the swing of a golf driver. At the beginning of the swing the motion is relatively slow but as the club descends and begins the move forward, the stimulus is increased so that at the instant of contact with the ball there is the maximum speed and so the greatest momentum of the club. Quite apart from precision in directing the course of the club is this time element in the regulation of the strength of the stimulus.

Referring once more to the pull of the arm in the crawl stroke, it is evident that to exert maximum effort constantly from the time the hand enters the water until it is withdrawn would not give the best results. The question is—just at what point or through what portion of the arc will the extra stimulation be most effective? Analysis of this has been made by Cureton,¹ whose experimental results may be summarized as follows.

The net results of the total force applied at any portion of the stroke may be resolved into that for supporting the body and for producing progress. Of these two the greater component should be the propulsive. Now considering the stroke itself, it is evident that during the downward motion of the hand this is not the case. The tendency here is to raise the body in the water, but as the sweep of the hand carries it more and more backward its propulsive force increases while its elevating influence decreases. Vector diagrams show that with the arm at right angles to the surface of the water the force is entirely propulsive. Here then is the time for the chief effort, but when does this mechanical advantage begin and how long does it continue? Analysis of the position of the arm lever at thirty degrees with the surface of the water shows that there is a fair propulsive power, and further that when the arm has passed through to the 120 degree angle, the propulsive factor is still strong and the pulling muscles have reached that stage in their contraction where they are acting efficiently upon the lever. This being the case it appears that beginning at the thirty degree angle and continuing through an arc for about ninety degrees is mechanically the time for emphasis in the stimulation because of the mechanical advantage during this range of the arc.

In arranging a series of exercises on a given piece of heavy apparatus for competition, much attention has to be given to the parts used, direction of movements, stops and starts, etc., if a fair test of the skill of the performer is to be secured. The sequence of the different types and directions of movements as well as the parts used is definitely related to the smoothness, difficulty, etc., of the test.

¹ Cureton, Thos. K.—Mechanics and Kinesiology of Swimming. *Research Quarterly*, 1: 87-121. Dec. '30.

The exact sequence of timing in the shift,—the charge of the line, the thrust of the backs, as well as the various interference groups,—is said to be a large factor in the success of the attack of Rockne's football team.

Synchronization or time coordination of movements frequently contributes much towards or seriously interferes with the ease of performance.

In walking or running, the swing of one arm with the corresponding movement of the opposite leg is the ordinary procedure. Try the reverse, e.g., swing the right arm and right leg forward at the same time. The result is awkward, jerky and tiring.

In learning exercises on the side horse with pommels, a new method of balance must be learned, e.g., the shifting of the weight for leg circles. There must be a synchronizing of the support with the movement prescribed in order to give satisfactory performance. This balance is so different from that during which the weight is supported by the legs that great difficulty is frequently experienced by the beginner in making the adjustment. The discriminating teacher will soon detect whether actual weakness or failure in time coordination is the difficulty to be overcome by the unsuccessful candidate.

Carry this same idea into team performance. Every basketball coach knows that to organize his attack a fairly exact timing is essential. There is a certain position on the floor for each player involved in the combination and he must be there at a stated time, otherwise the formation will not function.

Closely related to sequence and synchronization is rhythm. Rhythm has its basis in time to which has been added emphasis or accent. It is quantity plus stress or beat.

A recent article by Rath³ has covered this phase most thoroughly. Quotations from Rath follow.

"Spencer dwells at length on the rhythm of the solar system, the earth and other planets, and the rhythm of atmospheric and meteorological changes. . . . The universe goes on indefinitely in regulated movements. Planets and their satellites, celestial wanderers of the sky, continue their rhythmic pace in endless revolutions. The changed tide obeys the silvery moon that wanes and waxes in measured intervals. . . . The human organism is an example of numerous systems of rhythms integrated into a living unit. Rhythm is found in parts of the cells composing the human body such as the moving of the cilia, in the cells themselves, in the tissues where many forms of movement take place, in order of time as well as in direction, in organs of the body and in systems of organs. All the vital bodily functions operate at regular intervals. Governed by the autonomous nervous system, the pulse throbs in definite measure in response to the beating of the heart and inspiration and expiration alternate rhythmically. Probably all of this is but a phase of the cosmic rhythm governing the universe. . . . Man therefore works preferably in rhythm. Bucher

³ Rath, Emil. *Polyrhythmic Gymnastics*. Research Quarterly. 1: 9-28. Mar. '30.

in his thorough study of the origin of work and rhythm concludes that **most** work of primitive people was carried on in a rhythmic manner. Certain sounds always accompanied the rhythmic work. If the sound was not produced by the work itself, other means were used to provide it. The human voice was one of these means for rhythmic accompaniment of work. Even today there are certain calls associated with the work of sailors, boat crews, and others used to add rhythmic swing to their labor. . . . Primitive man used the most economical method, the method requiring the least exertion and the most favorable condition in which to do his work."

In practical everyday life the rhythmic tendency is manifested. The barber continues to close and open his scissors while changing the position of the comb. The blacksmith strikes the anvil while with the other hand he turns the heated iron to a new position. In these as in so many other activities there is a certain amount of energy expended which does not contribute directly to the work being done, but the justification for it is that this continuance of rhythm is less expensive of energy than its interruption which would come by stopping the movement and starting it again.

Whenever the natural rhythm of walking is disturbed, the fatiguing effect is increased. This is not always related to the amount of energy expended per unit of time. Strolling too slowly to take advantage of the swing of the legs is reported as more tiring than walking at a normal pace. Walking the ties of a railroad where the ties are not uniformly spaced is known to tire one more readily than when a normal length of stride may be maintained.

In a great many activities in physical education the synchronized and rhythmic aspects are combined. Swimming the crawl stroke may be cited as an example. The prominence of the rhythmic element is indicated by the description of the crawl in terms of "beats" such as the four, six or eight beat crawl. It is found that the pull of one arm is stronger than the other and generally the thrash of one leg more powerful than the other. This naturally results in an accent which places the exercise in the realm of true rhythm. The frequency of motion in the leg is greater than in the arms largely because of the limited range of movement in the former. But it is the proper timing which gives real effectiveness to the combined effort. So one of the most important aspects of teaching this stroke is to develop a rhythm in accordance with that which seems natural for the individual, hence the variety of leg beats per arm cycle.

Rath (pp.14-15) has given a fine summary of this aspect of exercise as follows:—

"When applying these characteristics to bodily movements we must be sure that the rhythmic activity consists of a tensing movement following by a non-tense phase as occurs in the rise and fall of the wave; that no motion is identical with its predecessor, and that the proper relaxation of non-active body parts accompanies all action. Exercises in which the flow of continuity is broken by

pausing in positions and requiring volitional impulses for each change of position, and in which relaxation is absent, do not belong in the class of rhythmic activities.

"Human beings sense the lack of rhythmic elements in their lives and instinctively adopt defensive and protective measures against the harmful influences. . . . So-called jazz, with its simple, primitive rhythm and its clanging sound, is not a progressive achievement of our machine age, as is claimed, but rather an atavistic expression, and an antidote to counteract its mechanical meter. Dancing to this rhythm is closely related to the dances of primitive people. The tremendous popularity of sport and its huge spectacles, though educationally unsound as now conducted, is due to the opportunities given crowds of people to spontaneously and freely express their feelings. These people have fled from the monotony of their machine-like existence which suppresses all self-expression and obliterates individuality."

One of the trends in modern education is the attempt to give more opportunity for this very spontaneity and self-expression, hence the radical curriculum changes. This has very properly entered the field of physical education. In the primary and elementary grades it takes the form of establishing some cadence, usually by music, and the children are allowed to respond by whatever activity is naturally called forth. But even here something of the formal is introduced. This formality becomes more marked when certain activities are expected to accompany certain musical compositions, e.g., galloping horses, duck waddles, elephant walks, bunny hops, etc.

Is the swing to "natural gymnastics" an attempt to apply this relief principle to secondary grades or even to adult ages? If so, there is much to commend it, especially from the theoretical point of view. One of the practical difficulties resides in the situation, practically universal in temperate climates, where indoor space is necessarily limited. With a large class exercising on a gymnasium floor, there is a strong probability that individual self-expression on the part of some is likely to interfere with a similar privilege on the part of others, and confusion may result.

The adjustment between the formal and the natural is one of the problems awaiting solution in physical education.

Despite the failure to analyze the mechanics of most activities, it is still true that the human machine is more efficient than any yet constructed by man. Under favorable conditions, the human body will deliver, as work, from 25% to 33% of the total energy expended, whereas the internal combustion engine falls considerably short of this efficiency.

SUMMARY

The source of energy in the human body is chemical, its application is physical—the proper mechanical use of the bodily machine. Bones are the levers which are manipulated by the pull of the muscles, either to maintain position or produce motion. Skeletal muscles are

activated by impulses along the efferent nerve fibers. Physical aspects of outgoing nerve stimulation considered are:—

1. *Direction.*

Only the muscles involved should be stimulated. Special attention should be given to keep relaxed the muscles opposing those called into function. Finely localized movements require particularly nice control of outgoing stimulation.

2. *Strength.*

The expenditure of more energy than is required is waste. Stimulation beyond the ability of muscles to respond results in immediate fatigue, consecutive fatigue or rupture.

3. *Timing.*

The time of originating nerve impulses reaching muscles is viewed as to sequence, synchronization and rhythm.

ADDENDA

Suggestions as to application of some of these mechanical principles have been made in the paper. Each teacher may for himself devise an outline whereby the faults and merits of a performer in any event may be checked. A sample of a very simple scheme is submitted below for swimming the crawl stroke. This event is selected because it contains adequate opportunities for analysis, only a fraction of which are listed. The movements are comparatively slow and therefore easy to follow, the swimmer may be watched head on or followed along the length of the tank, turns are subject to close check, and in fact any feature of the form may be thoroughly scrutinized.

Some Suggested Points for Checking the Crawl Stroke

A. General

1. Balance—angle of body line to water surface—(aquaplaning).
2. Portion of body out of water, bobbing or uniform.
3. Course—viewed head on, straight or weaving.
4. Roll of shoulders and hips.
5. Position of head—relation of face to water surface.
6. Rhythm and emphasis on stroke, continuous flutter or occasional trud-geon, coordination of arms and legs.
7. Breathing—frequency, nose and mouth, position of head, relation of arm recovery, relation to turns.
8. Turns—approach, actual change of direction, push-off, body in relation to water surface.
9. Length of glide, time of beginning thrash and arm pull.
10. Relative power from arms and legs.

B. Individual Parts

1. Arms

- (a) Direction—relation of arm pull to median line of the body (parallel or at angle, lateral distance from median line), position or flexion in elbow, hand and fingers at various stages of the pull and recovery (entering water, leaving water).
- (b) Strength—equality of pull on two sides, place in stroke of greatest effort, shoulders lifted with a pull, roll of body.
- (c) Timing—continuity and relation of movements at various stages of the stroke, rhythm of motion in arm cycle, time relation to hand entering water, with other hand withdrawing from water in recovery, relation between breathing and arm stroke (right and left).

2. Legs

- (a) Direction—spread of legs, distance of feet apart, width of thrash, relation of feet (parallel or toeing in), action in knees and ankles, relation of heels to surface of water.
- (b) Strength—emphasis of beat on down or up thrash, roll of hips.
- (c) Timing—relation of thrash or beat, is individual suited to a four, six, eight or ten beat crawl, coordination between legs and arms.

The Four Year Curriculum in Physical (Sports) Education

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THE Secretary of the Society has asked me to present a paper on the topic, "The Four Year Curriculum in Physical Education," presumably for institutions of higher learning. This title is so broad that the assigned time limit prohibits any attempt to discuss all phases of the subject and likewise prohibits any attempt to discuss any phase of the subject in detail. I shall, therefore, confine myself to discussing in a rather general manner three questions which, while not by any means settling the problem or problems implied in the topic, will at least reflect my own attitude toward the matter and perhaps represent a contribution that will be useful in the formulation and conduct of such a curriculum. The three questions to be discussed are as follows:

- I. What is physical education?
- II. Should institutions of higher learning offer a four year curriculum in physical education?
- III. Assuming that institutions of higher learning should offer a four year curriculum in physical education how should it be organized and conducted?

I would like to add at this point that the paper will be confined principally to a consideration of the curriculum in physical education. The program in extra-curricular sports will be referred to occasionally. The program in controlling health conditions, that is, the school's effort toward producing conditions favorable to education, will be referred to on one occasion. The curriculum in health education, that is, teaching hygiene behavior, will not be discussed at all.

What is Physical Education?

The curriculum now designated as physical education was introduced in the educational program by the ancient Greeks. This curriculum was introduced and conducted on the general theory that the human organism displayed two relatively distinct aspects, mind and body, and that life correspondingly included two relatively distinct qualities, mental and physical. The educational program, adjusted to this general theory, accordingly included two main divisions. Plato designates these as music and gymnastics. The first

was designed to develop the mind, or engender mental qualities; the second was to develop the body, or engender physical qualities. Various writers pointed out that these two aspects or qualities were related, but all in all the divisions mentioned were commonly accepted as separate and distinct.

Physical education, as such, faded out of the educational scene with the decline and passing of the old Greek civilization, and, with the exception of a few sporadic instances, did not make a lasting reappearance until the latter part of the eighteenth century. Due to the persisting influence of the old Greek civilization the work was reintroduced at this time under the old mind-body concept of the human organism, life and education. Academic studies provided for the development and perfection of the mind. Gymnastics was introduced to provide for the development and perfection of the body.

Physical education in one guise or another gradually spread to the four corners of the earth during the next century and a half and throughout this period was introduced and carried on in and out of school under this general mind-body concept of the human organism, or a further expansion of the same concept. During the later part of the nineteenth century a three-part concept of the human organism came into popular usage. According to this concept the human organism displayed three distinct aspects, mind, body, and soul; and life correspondingly displayed three distinct features, mental, physical, and spiritual (or moral, or social, or ethical). The Y. M. C. A. emblem bearing the inscription "body, mind, spirit," which was devised during this period is symptomatic of this three-fold concept. The phrase "keep a sound soul, clean mind, and a healthy body" found in the sportsmanship code of the Sportsmanship Brotherhood is a further indication of the popular acceptance of this point of view.

During this period, also, the term "gymnastics" was abandoned and the terms "physical culture," and "physical training," respectively were introduced and used. Later both of these terms were abandoned in favor of the term "physical education." Within the last decade or so the term "health education" has been introduced to replace the term "physical education" in a few instances but this designation has not met wide general approval and its widespread acceptance seems to have been definitely checked. The term "physical education" is commonly used today.

The pertinent point in the above discussion for our present consideration is that the curriculum now called physical education came into existence and through the centuries has been carried on under the assumption that the organism had two or three main aspects (physical and mental; or physical, mental, and spiritual) and that there should be separate programs of education for each of these aspects. Physical education was designed to educate or develop the

body. During this period different leaders formulated and propagated theories and programs which favored one, two, or more particular qualities such as strength, harmony, beauty, neuro-muscular skill, organic health, all around development, etc., but in each instance the concept and subsequent program was based on the theory that physical education was concerned with an assumed independent physical phase of the human organism. Physical education was born and grew up on the slogan, "*Mens sana in corpore sano.*"

Now, the speaker wishes to point out that present day psychology and present day educational thought no longer support this concept of the human organism, nor this concept of life, and consequently cannot support a bi-party or tri-party concept of education. Psychologists insist that that which we may call mind and that which we may call body are integrated. The human organism is a unit. The mind and body function integrally, not independently. Educational leaders insist that education is a process of preparing individuals for life or living. Activity, behavior, conduct, call it what you will, is the essence of living. Living is made up of a great mass of activities. All activities combine physical and mental responses. Education is essentially a process of directing individuals in the learning of activities. In a primitive society children and youth are directed in the learning of the tribal activities by parents and associates. In what we choose to call a civilized society the state organizes and conducts schools wherein children are directed in the learning of civilized activities. The school's organized effort in instruction is technically designated as the curriculum.

The new approach to the problem of curriculum construction is something as follows: The curriculum maker posits the assumption that the overhead objective for general education is "a good life," or "tip top living," or "socially efficient conduct." He then reviews life and notes the activities which constitute such a life both current and future. The presumption is that in school a student should learn to do well the things he tends to do, or will find it advantageous to do, currently and in the future outside of school. The desirable activities, when determined, are listed as the ultimate or conduct objectives of the school curriculum. All analysis of such activities shows that performance necessitates the possession of a variety of skills, habits, knowledges, rules, attitudes, etc. These are listed as immediate or control objectives of the curriculum. Further analysis shows that the acquirement of these controls of conduct involves the performance of certain learning activities. These activities are listed as learning exercises. A complete curriculum outlined on paper for the teacher's use thus includes statements relative to the three following items: (1) ultimate or conduct objectives, (2) immediate or control objectives, and (3) learning exercises.

More might be said about this matter but time forbids. The essential facts for our present purpose are two. The first is that educational leaders no longer recognize a physical-mental division of human behavior. For convenience in handling, living is commonly split up into divisions but the divisions are made in another direction. Common divisions are communication activities, leisure time activities, health activities, civic activities, vocational activities, etc. Mental and physical responses are involved in all these activities. The divisions made are artificial and produce duplication but the general plan is more or less universally accepted with a total dismissal of the old mind-body division. The second is that school curricula are now being formulated in terms of teaching out of school behavior, activity or conduct. The objectives of these new type curricula as we have previously noted are the activities comprising "tip top living," current and future. Education is conceived as a process of directing individuals in the learning of the activities constituting "a good life."

What significance do these facts hold for the curriculum now designated as physical education? Review of the literature and observation of curricula in actual operation indicate that there are three general types of activities now included in our physical education curricula. A limited amount of time is devoted to so-called formal activities (marching, calisthenics, drills with hand apparatus, etc.) Some attention is given to corrective gymnastics (artificial or special exercises prescribed to correct a defective condition of the organism). The great bulk of the curricula is made up of what for want of a better term we commonly designate as big-muscle play activities (games, combative contests, dancing, etc.) Since education is now conceived as fundamentally a process of directing individuals in learning activities which constitute tip-top living outside of school we must investigate these activities by this criterion.

An examination of out of school life indicates that formal activities are practiced only in a very limited way. A few persons engage in calisthenics and exercises with hand apparatus, but it is the writer's notion that this practice is principally a hang over of an outmoded concept. Further than that the practice of such activities is of extremely doubtful value. A few persons march in parades but then only infrequently. Since so-called formal activities constitute only a minor place in out of school living, and further are of doubtful value, such activities, if we accept the assumption that we should only include in our curricula those activities which tend to go on out of school and are widely recognized as essential in "living gloriously," may be, in the speaker's judgment, appropriately eliminated from our curriculum.

Among the individuals in school we find some who exhibit physi-

cal defects—flat feet, under-nourished bodies, crooked spines, weak hearts, etc. The possession of such conditions interferes with normal living, and likewise interferes with normal growth, tip-top living, and, withal, the educational process. Schools accordingly have organized special classes for such individuals, called corrective gymnastics, wherein the effort is made, through prescribing special exercises, to reduce the handicapping condition.

I would like to point out the following facts with regard to this work. Corrective gymnastics in the final analysis is concerned solely with removing a state or condition. An individual taking this work is asked to perform prescribed exercises to the end of correcting or remedying an existing defect. If we accept the thesis that education is a process of directing individuals in the learning of activities constituting high grade living, then corrective gymnastics (by what ever name we wish to call it) is not education at all. It is a type of therapeutics. Correcting defects in this manner is directly comparable to removing adenoids, or providing children with glasses, or providing adequate ventilation. The removal of adenoids, outfitting with glasses, and providing adequate ventilation, like the correction of physical defects is not education. Doing these things merely produces conditions which facilitate educational procedure. We may say thus that corrective gymnastics is a part of the school's program in controlling or supervising health conditions.

It may be added here that in actual practice a great many individuals are placed in classes in corrective gymnastics who should not be assigned to this work. There is first a group possessing defects that special physical exercise cannot aid—individuals with hunch backs, organic heart lesions, missing limbs, kidney disturbances, defective vision, flat feet, hernia. These individuals should be taught big-muscle play activities adapted to their handicapping condition. There is secondly a large group possessing slight and inconsequential defects that would be automatically corrected if the individuals could be gotten to participate regularly in a program of big-muscle play activities—individuals with round shoulders, under-nourished bodies, functional scoliosis, weak feet, etc. Furthermore individuals with correctable defects in addition to performing exercises for the removal of defects should be taught play activities like normal individuals. The school must prepare subnormal individuals for out of school living as certainly as it must prepare normal individuals for such living. This means that the students assigned to corrective gymnastics must be conducted through two types of programs of activity—one directed toward the removal of defects and a second directed toward the teaching of natural out of school big-muscle play activities.

This point of view in no way lowers or reduces the significance and value of corrective gymnastics. Corrective gymnastics is all

important to those who need it and can benefit by it. Corrective gymnastics, thus, while in practice commonly conducted in connection with the curriculum in physical education, in a strict sense, is not physical education. It has been, and quite possibly should continue to be, affiliated with physical education because of the all-around practical convenience of the arrangement but it should not be confused with that work.

An examination of out of school life indicates that boys and girls, men and women, engage in a great mass of so-called big muscle play activities. It is universally agreed that participation in such activities constitutes a wholesome means of utilizing leisure time, contributes directly toward producing health, and is an effective agent in character formation. Big muscle play thus is an essential feature of "socially efficient conduct." The curriculum in physical education may thus validly include instruction in big muscle play activities.

In the preceding paragraphs we have pointed out that of the three types of activities now commonly included in the physical education curriculum, formal activities should be eliminated, that corrective gymnastics, in a strict sense, is not physical education and may be dismissed from consideration, and that big muscle play activities may be validly included. We thus come to the conclusion that physical education is concerned exclusively with big muscle play activities. We may, therefore, tentatively define physical education as that phase of education which is concerned with directing individuals in the learning of big-muscle play activities.

I would now like to suggest that since psychology and present day educational thought have abandoned the old dualistic body-mind concept of the human organism, the very structure upon which the curriculum in physical education was founded, we might advisedly consider the abandonment of the designation, "physical education," for this phase of education. This title carries connotations and implications that have handicapped and befogged the work from the beginning and will continue to do so as long as it is retained. If we abandon the title, physical education, the question arises what title shall be introduced to replace it? There are several obvious possibilities, health education, recreation education, play education, leisure-time education, big-muscle education, sports education. Lack of time forbids a discussion of the merits and demerits of all these titles. Each presents certain advantages and disadvantages, but of the lot, "Sports Education" is perhaps the most completely satisfactory.

I have previously pointed out that education is a process of directing students in the learning of activities. I have also pointed out that at the present time the great bulk of the curriculum in physical education is made up of big-muscle play activities and the activities not of this type should be eliminated from the curriculum. Now, I

would like to point out that with the exception of two types of activities (dancing and stunts) all these big muscle play activities are commonly considered as sports. Further, it takes no great stretch of the imagination to consider these excepted activities as sports. Physical education may be thus defined as education in sports. If physical education is education in sports then, in reality, physical education is sports education.

It is my sincere belief that "Sports Education" defined as "that phase of education concerned with directing individuals in the learning of sports," describes most effectively the work we are trying to do and should be doing under the banner of "Physical Education." I define sports as including "all relatively vigorous activities that individuals voluntarily engage in for fun, joy, or satisfaction." A curriculum combining this phase of instruction with instruction in health might be called, "Health and Sports Education," or the reverse "Sports and Health Education."

The adoption of the title "Sports Education" in place of the title "Physical Education" seems to me to be thoroughly desirable. Lack of time prevents an extended discussion of this matter, but I will take the time to mention two reasons why the change seems justified.

First, an examination of existing physical education curricula will show conclusively that the great bulk of the work now carried on is in fact sports education. The Committee on Curriculum Research of this Society recently made a study relative to certain aspects of the activities included in the University physical education curriculum. The list of activities used in this study is as follows: Swimming, diving, tennis, football, basketball, squash, squash tennis, soccer, baseball, life saving, speed ball, playground ball, golf, boxing, handball, water polo, volley ball, touch football, gymnastic games, gymnastic relays, modified games, wrestling, track and field, tumbling, pyramids, fencing, gymnastic dancing, folk dancing, clog dancing, tap dancing, heavy apparatus, horseshoes, quoits, archery, free exercises, marching. The list includes a total of thirty-six activities or activity types. Of this total list all but three activities, free exercises, marching and life saving, are, or can be, readily conceived of as sports.

Second, the adoption of the title "Sports Education" will serve to emphasize the sort of education we are and should be conducting and, further, enable us to break clear away from the ideas, traditions, and practices which cling like barnacles to the old titles "Gymnastics," "Physical Training," "Physical Culture," and "Physical Education." Twenty years ago Wood and Hetherington started the movement to reorganize physical education in terms of education in play. Williams, Nash, Mitchell, and a dozen others more recently have striven to attain the same end, yet, due to the retention of the old title which carries with it out-moded concepts and practices, progress has been

slow. If the title is retained, progress will continue to be slow. In the face of the fact that the title "Physical Education" is based on an out-moded concept and the title represents a handicap to progress it could well be abandoned. Since the title "Sports Education" designates quite clearly the sort of education we are and should be conducting more clearly than any other term available it may well be adopted.

Three objections have been raised to the adoption of the title, "Sports Education." These objections are, however, in my opinion of minor significance. One is that three types of activities, which are and should be included in our curriculum, are not commonly considered as sports, namely, dancing, stunts and life saving. These activities, however, being "wholesome, relatively vigorous activities that individuals voluntarily engage in for fun, joy, or satisfaction," come within my definition of sports and may be thus readily included within the category of sports. Second, the term sports carries an undesirable flavor. This, of course, is due to the fact that some of the activities have been in bad company. It must be admitted, however, that fundamentally the activities included in the designation sports when carried on under proper conditions, are entirely wholesome and desirable. Third, the term "sports" includes some activities which we cannot, at present at least, conceive of including in the curriculum, for instance, hunting, fishing, horse racing, etc. The answer to this criticism of the use of the term sports is, of course, obvious. No curriculum can or need include all the activities included in the field of behavior with which it is concerned.

II. Should Institutions of Higher Learning Offer a Four Year Curriculum in Physical (Sports) Education?

This is a question which will have to be decided by each individual institution. At the University of Illinois we offer two years of physical (sports) education at the present time. I know from my observation of this work that the great majority of students finish the two years possessing the ability to participate in only a number of sports. It will be noted that by my definition and interpretation of physical (sports) education the objective of the curriculum is ability to participate with a fair degree of success in a wide variety of sports. An individual who has learned the fundamental skills, rules, technique and standards of conduct (hygienic and social) of a wide variety of big muscle play activities or sports has completed his physical (sports) education. The condition existing at the University of Illinois quite likely is not widely different from the condition existing at other institutions. Since the great majority of students are now completing two years of physical (sports) education in institutions of higher learning without achieving the objective sought, it may

be logically assumed that extending the program over the third and fourth years will increase the opportunity for achieving this objective.

There is some possibility, however, that the new movement in the reorganization of institutions of higher learning will result in the formulation of a general University program that will make the further extension of the curriculum in physical (sports) education unfitting. I am here referring to the fact that institutions of higher learning are exhibiting a marked tendency to draw a rather rigid line between the first two years and the second two years and further to conduct the second two years on the individual investigational or research level. If this tendency persists then it is doubtful if physical (sports) education would be considered as a fitting item for inclusion in this upper level.

There are other ways, however, of solving the problem—the problem of securing for each individual a complete physical (sports) education. One way would be to improve the quality of work, both in organization and instruction, done in the lower levels, elementary school, secondary school, and the first two years of college. Another way would be to increase the amount of time devoted to this phase of education in these levels. Both are perhaps necessary but for the present it is the writer's belief that the first is most pressing.

III. Assuming that Institutions of Higher Learning Should Offer a Four Year Curriculum in Physical (Sports) Education, How Should It be Organized and Conducted?

I would like to point out that there is a fundamental difference between a University curriculum in physical (sports) education and a program in extra-curricular sports (intercollegiate sports and intramural sports).

The University is primarily an educational institution. The University administration employs a faculty to teach. Young people attend the institution to learn. The University faculty organizes distinct courses in history, philosophy, chemistry, physiology, etc. Students enroll in these courses, are taught a certain body of material, are examined at the end of the course, are graded according to their demonstrated learning, and in cases where they show satisfactory learning are given University credit.

The University faculty and students cooperating, organize and conduct a broad program generally known as extra-curricular activities—dances, bands, newspapers, debates, plays, etc. These activities are organized and conducted to serve a variety of purposes—recreational, professional, social and supplementary educational purposes. Unquestionably the students who participate in these activities learn; but it will be noted that as organized and conducted the learning is not shared equally by all participants, the amount and quality of

learning is not controlled by University authorities, and further the students are not examined to determine the learning that takes place.

The two types of programs outlined above, thus, are fundamentally very different. Physical (sports) education falls in the first category; extra curricular sports falls in the second.

It is the writer's contention that physical (sports) education is as worthy as anything else included in the University curriculum. If the work is to achieve a position of respectability on the campus that it unquestionably deserves, then it must be organized and conducted according to the general principles and practices adopted for use by the whole University and not according to independent standards set up by and for itself. I do not propose to discuss all the standards which are commonly accepted by institutions of higher learning, nor do I propose to discuss any one in detail, rather I shall devote myself to discussing briefly four practices which I consider of particular significance at the present moment.

1. Courses in physical (sports) education should be outlined in advance. These course outlines might be made up in a number of ways but the best modern practice suggests the inclusion of statements covering the following items:

(a) Ultimate objectives (in terms of future out of school behavior—playing handball, playing soccer, performing tumbling stunts, etc.); (b) Immediate objectives (skills, habits, knowledges, ideals, etc., necessary to attain the objective) i.e., in handball, the skill of serving, the skill of returning a ball off the floor, the rules of the game, the social standards of play, etc., in other words, all the items essential to playing handball well; (c) The principal learning exercises (activities the instructor will ask the students to perform to the end of attaining the objectives) i.e., in golf, practice putting, practice driving, practice approaching, reading the rules, etc.

All other courses offered in the University in one form or another have such outlines—textbooks, course outlines, readings, etc., are used universally. Courses in history, mathematics, geology, commerce, etc., are organized to cover a certain amount of ground or from another point of view secure a certain amount of learning. The ground to be covered, or learning to be attained, is definitely determined in advance. This is an accepted and proper university practice. The general university faculty will never take physical (sports) education seriously until these same practices are adopted in this work. The adoption of this plan will necessitate the abandonment of the present day practice of making up the daily lesson just before the lesson starts, or, as is not uncommon, while the class is in actual session.

2. All courses in physical (sports) education should be organized to give final examinations. All the other courses offered in the uni-

versity give such examinations. In courses other than physical (sports) education the students are asked to learn certain things. Final examinations are given to determine how well the students have learned these things. They are then graded according to the amount of learning they demonstrate. The grades awarded may be merely pass or fail, or they may be awarded on a predetermined alphabetical scale or numerical scale. Students who demonstrate a satisfactory learning in a course are given credit for that course.

The plan now commonly practiced in physical (sports) education, of basing grades and thus awarding credit for attendance is educationally indefensible. The University is organized and conducted for the purpose of directing students in learning. The University awards degrees which are in reality certificates of learning or diplomas of education. These degrees are awarded for securing a stipulated number of credits. Credits are secured for the demonstration of a satisfactory attainment of the objectives (or learning of the materials offered) in courses. If the degrees a University offer are to mean anything, then the faculty must examine the students to determine the learning achieved in the courses offered. No University could defend, or would attempt to defend, a policy of awarding degrees on mere attendance. The curriculum in physical (sports) education cannot be defended on these grounds either.

Lack of time forbids a lengthy discussion of the general examination problem, but the utter significance of the matter seems to warrant mentioning three items: (a) Grades awarded on the basis of the student's attitude, tardiness and other devices are indefensible. Physical (sports) education courses, like all other courses, should be conducted for the purpose of teaching something (in this case golf, gymnastic dancing, swimming, etc.) and those taking the course should be graded for their demonstrated learning of the thing taught (golf, gymnastic dancing, swimming, etc.) and nothing else. (b) All examinations should be organized and conducted when practicable on the objective basis. In golf, for instance, the final examination might consist of playing 18 holes. We could award final grades on the following basis: Over 105—E, 101 to 105—D, 96 to 100—C, 91 to 95—B, 86 to 90—A. In tumbling we might teach 20 stunts. In the final examination the student would be asked to perform these stunts. The stunts would be judged in terms of performance or non-performance. The final grade could then be awarded on the following basis: Performing 16 stunts—100, 15 stunts—95, 14 stunts—90, 13 stunts—85, 12 stunts—80, 11 stunts—75, 10 stunts—70. Less than 10 stunts, fail. (c) The grades should be awarded in physical (sports) education courses in accordance with the general policy of the University in which the work is carried on. If the University has no definite policy then it might be best to adopt a policy of conformation to the

normal curve of distribution. Such a policy may be adequately defended.

3. The curriculum in physical (sports) education should include courses organized and conducted for instructional purposes only. The curriculum in physical (sports) education, as commonly organized and conducted at the present time, includes three practices which not only are not acceptable as general University standards but are not defensible from an educational point of view. These three practices and the reasons why they are unsound are as follows: (a) Students enrolled in physical education are permitted to transfer to varsity squads and through participation in the activities of such squads satisfy physical education requirements. It may be pointed out that fundamentally varsity teams are not organized and conducted for the purpose of teaching all the individuals out for such teams in all the fundamentals of the sport, but to turn out the best team possible. This results in two practices which cannot be permitted to obtain in courses organized for educational purposes. First, individuals are assigned to restricted fields; in track and field for instance, running the hundred yards, or putting the shot, or high jumping; or in football left guard, or right end, or quarter back. Secondly, those who have special aptitudes are given the bulk of instruction. (b) Students enrolled in physical education are permitted to satisfy the requirements and granted credit through participation in intramural sports. This practice is entirely unsound. Imagine the Department of English enrolling students, then permitting them to transfer to the fraternity debating team, and then at the end of the semester giving them credit for "participating in five debates"; or the Department of Journalism permitting students to transfer to the staff of the "College Daily" and then at the end of the semester giving them credit for "writing ten articles." (c) Students enrolled in physical education are permitted to satisfy the requirements and receive credit for "free participation" in sports, in some instances solely on their word that they "have participated" or "will participate." I am here referring to the practice where, for instance, a student enrolls in handball, then two or three times each week "checks in" at the handball courts, and at the end of the semester, if the records show a sufficient attendance, he is awarded credit. This practice obviously cannot be defended in terms of organized education. Imagine the Department of French enrolling students and then if they have reported to the Library attendant a sufficient number of times, giving them credit in French.

It is my contention that all these practices should be abandoned. Educational soundness demands that learning should be directed, and that the amount of learning should be checked. It further demands that all students enrolled in a given course should be given equal

learning opportunities in all the ground covered. This means that the entire curriculum should be organized in regular instructional courses. Any other plan is a compromise.

4. The Curriculum in physical (sports) education should be organized and conducted in courses so there is no duplication. At the present time we have physical (sports) education curricula wherein students cover the same ground year in and year out. In some instances the students are put through a routine made up of marching, calisthenics, apparatus exercises, group games, relay races, basketball, playground ball, etc., that remains unchanged for two, four, or more straight semesters depending on the amount of attendance required. In other instances when students are permitted to transfer to varsity squads they may spend an equal number of semesters at the same activity, perhaps, playing goalie on the soccer team, or right field on the baseball team. If students are to be permitted to do this then let us record the credit honestly and properly. Instead of giving them credit in physical (sports) education they should be credited as follows: 1st semester, "playing right tackle," $\frac{1}{2}$ credit; 2nd semester, "playing right tackle," $\frac{1}{2}$ credit; etc., for the balance of the course.

It is a standard University practice, and quite properly, to prohibit awarding duplicate credit, that is, giving credit for the same course more than once. Departments of physical education nevertheless are violating this fundamental policy continuously. We list courses called P.E. 1, P.E. 2, P.E. 3, P.E. 4, etc., for successive semesters, in each of which the students are put through the same program and receive credit for each repetition. If this practice were acceptable to the rest of the University a student could enroll in five or six courses for the first semester—history, mathematics, P.E., etc.,—then enroll in duplicate courses numbered 2, 3, 4, etc., for the next seven semesters, and finally graduate from the University, having taken a total of five or six different courses. Further than that if the other departments pursued the policy of granting credit for the performance of an isolated activity, such as swimming the breast stroke, or rowing No. 7 on the crew, as is common in physical education when granting credit for participating on the varsity squad, a student could graduate from the University by performing five or six isolated activities eight times. In this case a University education might total something as follows: Physical Education—the ability to put the shot; English—the ability to recite "The Village Blacksmith"; Music—the ability to sing "Old Black Joe"; Chemistry—the ability to compound colors; Mathematics—the ability to solve mathematical puzzles; History—the ability to write out the essential facts regarding the Life of Henry the Eighth.

I propose to discuss one more question related to the original

problem of organization and conduct, namely, What activities should be taught in the curriculum in physical (sports) education? The general answer to this question, if one recalls the basic thesis upon which the curriculum recommended here is founded, is self evident. The general answer may be stated as follows: The curriculum in physical (sports) education should include most of the sports in which the student will currently and in the future tend to engage in voluntarily, that is, outside of school. The process of determining the specific sports that should be included consists of surveying the sports engaged in by students and adults outside of school, evaluating these in terms of leisure time, health, and character value, and then including those which seem most useful. I am not prepared to present a complete list of such sports at present but for the purpose of illustrating the type will say that the following would probably be included: handball, volley ball, golf, tennis, tumbling, soccer, tap dancing, wrestling, and swimming. Group games and group relay races, due to the fact that individuals engage in their performance only in a very limited way outside of school, probably should not be included. The test of the success and utility of any activity included in the curriculum may be reduced to the question: "Do a fair proportion of the individuals taking the course actually participate in the activity currently and in the future outside of school?" If a fair proportion do thus participate then the activity should be retained in the curriculum; if not, then it should be dropped from the curriculum.

The list of sports included in the curriculum should be as long and as varied as possible. This would serve to meet all tastes. The sports should be listed as separate courses in the physical (sports) education curriculum in the University catalogue. Instead of P.E. 1, P.E. 2, P.E. 3, etc., it would be better to list them as P.E. 1, Beginning Swimming, P.E. 2, Golf, P.E. 3, Soccer, etc. This would enable the students to register directly in the sports as desired. In some instances the sports might be combined to include two or three in one course but in most instances they should be listed separately. In some instances the curriculum might include two courses of the same type—one a beginning course, another an advanced course. When this is done, however, care should be taken to avoid duplication. It quite likely, would be desirable to set certain standards for admission to advanced courses. This might be done for beginning courses, too.

CONCLUSION

In the main body of the paper I criticised certain existing practices common in the organization and conduct of the curriculum in physical (sports) education. It is quite possible that I here conveyed the impression that the directors of these curricula were alone re-

sponsible for the conditions which exist. It is true that the directors must accept responsibility for some of these conditions but there are other factors which the directors cannot control which contribute to the making of these conditions—lack of funds, lack of administrative sympathy, lack of equipment, etc. The purpose of this paper has not been to criticise conditions but to indicate practices and standards which, in my opinion, we must strive to attain if physical (sports) education is to be conducted most effectively and achieve its purpose.

In the main body of the paper I made some statements which may have conveyed the impression that I am opposed to intramural sports and inter-collegiate sports. If this impression has been conveyed I wish to correct it. The reverse is true. I not only favor the retention of these programs but I favor their expansion. The program in intercollegiate sports in addition to including the sports now used might advisedly be expanded to include half a dozen more. Handball, volley ball, and a number of others might be added to the list. If it is good for John Smith to play in inter-collegiate football contests, and it is, it is equally good for Frank Jones to play in inter-collegiate handball contests. A completely satisfactory program in inter-collegiate sports, according to my point of view, would include from 2 to 8 contests (no less and no more) in 25 or 30 sports. The program in intramural sports should be expanded to include all the wholesome sports in which the students show interest.

The curriculum in physical (sports) education presented here envisages students taking sixteen different physical (sports) education courses during their high school and college years—one for each semester from the beginning of the junior high school through the second year of college. In such courses they would learn the fundamentals of eighteen or twenty activities. It envisages all students participating in a number of different intramural sports competitions in each semester during this period. It envisages all students participating on one or more varsity squads during this period and all or nearly all participating in varsity contests in at least one activity for one season. It envisages all students participating in a varied program of sports away from school during this period—on the playground, in the Y.M.C.A. gymnasium, at camp, etc. And finally it envisages students graduating from college prepared and disposed to participate in a number of sports during the years to come. Attention is called to the fact that a curriculum in physical (sports) education as outlined in the present paper wherein the students would be directed in the learning of an extensive program of sports would constitute the base for all this out of school activity. The curriculum undoubtedly would produce interested, intelligent spectators at sports contests, but this should be considered incidental; the vital objective and outcome should be the production of participants.

Grading Student Achievement in Physical Education Activities

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THIS paper will not present to you a "fool-proof"—whether "tried-and-true" or merely theoretically perfect—method of grading, nor will it offer you something new, something which has not already been said or written about elsewhere. Its function will be—and that was the task assigned me by your program committee—to describe to you, in as simple and non-technical manner as possible, the several methods of grading student achievements in physical education activities; to work these out with you in some concrete illustration; to interpret the obtained results; and to explore any stray ideas which we might encounter on the way to our goal and which clarify this goal.

It must be obvious, that with such a task ahead of us, we must steer clear of all such problems as "how a test should be constructed," "how validated," "how scaled" and others of like nature. Nor are we given leeway to scrutinize the whole question of grading, that is, its place in our work. Even were such a discussion desirable, time would militate against our undertaking it here. Let us, then, assume from the start, that "grading" is desirable.

Our first step is to define our terms. By "achievement" we mean "something accomplished." There is no difficulty in seeing this. But a difficulty does arise when you ask "on what should this accomplishment be based and how is it to be expressed?"

Student Black high-jumped 56 inches at the end of his Freshman year. This can, in truth, be called his achievement in high jumping. You will note, that it takes into consideration neither the high-jumping performances of others, what he was able to high-jump at any previous time, nor his innate high jumping ability. This basing of Black's high jumping achievement, on a single performance and expressing it as such, is, in and of itself, of no use in grading his high jumping achievement.

Such a single performance can, however, be used for grading, if we show its relationship to the performances of other students. Black has high-jumped 56 inches at the end of his Freshman year. The average high jump of the Physical Education section of which Black is a member (section 5) at the close of that school year is 54.5 inches. Thus Black is 1.5 inches above the average and this can be said to be his "achievement." The base now used is the relationship of a single

performance to the performances of others, and the achievement is expressed in a score showing this relationship.

There are other ways of expressing this relationship but that will be taken up later.

For purposes of "grading," "achievement" is more commonly interpreted to mean the "difference" in performance of the same individual tested at two different times. According to this, student "achievement" would now be based on "two or more performances of the same individual tested a certain length of time apart," and it is expressed in a score showing the relationship between these performances.

Student Black high jumped 52 inches at the beginning and 56 inches at the close of his Freshman year. The difference of 4 inches is one way of expressing the relationship between these two performances. There are two other ways of showing this difference in relationship terms. These will be taken up later.

Thus far we have seen that an "achievement" score can be based on either a single performance, on the relationship of that single performance to the performances of other students, or the difference between two or more performances of the same individual executed at two different times.

You will have noticed, that when using but one single performance as a measure of that student's achievement, the element of time does not enter into consideration. When the difference in performances of a student is used as a measure of that student's achievement, time plays an important role.

With the element of time creeping into our consideration of "achievement," we cannot tell, for certain, just what such an achievement represents. The observed difference may have been the result of the natural and normal growth of the student, of his participation in general neuro-muscular activities, of his practicing of that specific high jumping activity, or of the working of some other forces. What exact proportion of Black's improvement (and this might also be said of any single performance of his) is due to any one of these factors we do not know, nor have we attempted to find out. We know, as yet, of no way of measuring endowment independent of training, and none of our Achievement Tests measure, in the main, acquired differences.

Furthermore such factors as "interest," the "health of the student at the time of the performance," etc., also enter into determining the achievement — whether a single performance or a difference — in Physical Education activities, but we know so little (that is we cannot give these forces quantitative expression) as to their effect on this achievement that we cannot as yet give them a place in our testing and measuring program. Hence a discussion of their contribution

to grading of achievement has no place in our deliberations here.

You must keep these things in mind when "grading" student achievement. You may be able to get a score of his performance or of his improvement, but you are treading on dangerous ground when you assign causes for this performance or this difference. It seems wisest, and, in truth, is more scientific, to merely say that this and this score represents his "achievement," regardless of how "achievement" is to be interpreted, leaving the explanation of the causes of this phenomenon (except perhaps in the most general terms) to the more reckless spirits.

Having some slight idea of the meaning of "Achievement" let us now define the word "grading." The question arises, after you have determined on what you will base your achievement scores and after you obtain a score showing this achievement, what does such a score mean?

All testing is used for the single purpose of revealing correct differences between pupils or groups of pupils. The purpose of all achievement grading is to show these correct differences by assigning to these achievements quantitative and comparable values. "Grading" is thus defined to mean "the assigning of such scores to individual achievements which will show the exact relationship (in terms of correct differences) between those achievements and some reference point. This can only be done by showing the exact relationship either between a student's performance and the performances of his peers, by a student's performance to a former performance of his own, or by a combination of these two types of relationship.

Now our task resolves itself into (1) examining the types of relationship that could be used in order to arrive at an achievement score; (2) interpreting the relationship scores for grading purposes; and (3) determining who the peers are to be, if the score is to be based on the relationship of a performance with those of peers.

So far we have defined "achievement" and "grading." The rest of the title of this paper, namely "physical education activities" needs no defining. We can now begin to look at our problem more deeply. I may say at the start, that the data shown you in the accompanying tables are assumed. Also, the activity of high jumping was chosen for no particular reason. Any other activity might have been selected. Let me warn anyone here, not to think of using high jumping alone—as is done here—as a basis for grading. Illustrative simplicity is the sole reason for choosing but one activity in this paper. Our specific task will now be to grade the high jumping achievements of students Black, Brown and White according to the various interpretations of achievement and according to the various methods of grading.

The accompanying tables give us our working data. In table I we have the high jumping scores, the ages and weights of students

Black, Brown and White, all of whom are members of Section 5 of the required P.E. Freshman sections. In tables II, III and IV we have the age, weight and age-weight norms of high jumping of all enrolled Freshmen based on their entrance performance. In tables V and VI we have the high jumping scores of the 50 Freshmen of Section 5 taken at the time of their entrance into college, and of the high jumping scores of the same 50 Freshmen in section 5 taken at the close of their Freshmen year, and of the high jumping scores of all the incoming Freshmen of which section 5 is one section and so on. In table VIII we have a frequency distribution of the differences in high jumping performance of students in section 5.

We will begin our task of grading the achievements of Black, Brown, and White by illustrating how the relationship of their performances to those of their peers might be shown. In the main, there are three chief methods of interpreting individual records. The first is by showing the relationship of the single performance to either age, grade, weight, height or some other average or standard in the form of quotients. The second is by giving a numerical score to the record according to its percentile or deviation position in a defined group. The third is by assigning the record a position on a scale determined by the variability of judgments of "competent" judges. Because this third method utilizes judgments instead of objective measurements of the variable, we will leave it out of consideration here, devoting our time to the first two. We will consider them in the order given above.

Most quotients are based upon the norms or average performances of the different age levels. Let us now use "age" as our basis of classification, and let us, assuming the hypothetical data given in tables II, III and IV, define our terminology in their terms.

Table II gives us the ages of our enrolled Freshman class, and the average high jumping record for each age obtained from the testing at the beginning of the year. Black, high jumping 52 inches, would have a high jump age of 18, since the score of the boy is expressed in terms of the age of the average students who do equally well. In like manner, Brown's high jumping age is 20 and White's is less than 16.

The High Jumping Quotient for Black would be his High Jumping Age divided by his chronological age, or 18 divided by 19 times 100,¹ netting a score of 95. Brown's High Jumping Quotient would be 20 divided by 18 times 100 or 111.

We might also have divided the obtained score for Black of 52 inches by the normal score for 19 year old boys or 54 inches and obtained another High Jumping Quotient for him of 96. Calculating

¹ We multiply by 100 to eliminate the decimal point.

our High Jump Quotient in this manner, Brown would get a score of 108.

There exist no theoretical grounds establishing one of these Quotients as more "true" than the other, the "truth" in this case being the actual amount of high jumping ability possessed by a child as a fraction of the average amount possessed by a fair sampling of children of his chronological age.

What constitutes a true Quotient in a case like this is a difficult matter to determine. In the general education field, more people have used the first type of Quotient than the second, and perhaps that is the one we ought to use, if we use Quotients at all, although this is a poor enough reason for its adoption.

Neither of these two kinds of High Jumping Quotients, although built on other bases, tells us whether an 18 year old boy securing the High Jumping Quotient of 111 or 108 is more or less exceptional in his ability than a 15 year old boy securing the same Quotients. Nor can we know this till sound Zero points are established. This instability of the Zero point is one potent reason for our avoiding the use of Quotients.

What was said of the High Jumping Quotients can also be said to apply to the Achievement Quotients, since this is equal to the Achievement Age divided by the Chronological Age. This Quotient is also, at times, called the Accomplishment Quotient.

More often however, the Accomplishment Quotient, in the general education field at least, is obtained by dividing the Achievement Age by the Mental Age. A child's Mental Age is the general ability score divided by the corresponding age average. In our field, we would substitute the child's Motor Age for the Mental Age in the formula, this being the general ability score divided by the corresponding age average.

You will note here, that we have digressed somewhat from our original concept of "achievement." We started out, a while back, with securing an achievement score by comparing a single performance of a student with the performances of his peers. We are now, by the use of the Accomplishment Quotient, about to compare, and to derive a score through such a comparison, the student's performance with his native ability.

The Accomplishment Quotient was first proposed by Doctor Franzen and was popularized by Doctor McCall. It is supposed to grade a student according to whether or not he progresses at a rate which is proportional to the capacity with which he was endowed by nature. It was thought that comparing a student's achievement with his native ability, we would arrive at an ideal grade for that student.

Doctor Kelly shows, however, that "on the average, in the neighborhood of 90 per cent of the capacity measured by an all-around

achievement battery score and of the capacity measured by a general intelligence test is one and the same thing." That is, a common function is measured by 90 per cent of either of these two kinds of tests. He says further: "The community between these two functions is nine times as great as the disparity between them and any judgment of difference between them must be based upon the ten per cent of each not represented in the other, or it is a spurious judgment."

It is true that it is commonly found that an I.Q. score and an achievement test score do not correlate perfectly, but this may be due to chance errors involved in each. When allowance is made for these chance errors, the correlation between good battery achievement tests and intelligence tests is found to be very high. With an I.Q. of 10 and an achievement test score of 9.5, the judgment that the student is not working up to his mental capacity is sound only in the case where the Probable Error of the .5-age difference is small. But for further proof of Doctor Kelly's contention, I refer you to his book.¹

If Doctor Kelly's contention is true, and if it applies equally to neuro-muscular activity, then the classification, grading and marking of students upon their difference in these two traits is an absurdity. Only one-tenth of the tests are involved in this measure of difference, this bringing to pass an order of accuracy not of the total scores of the tests, but of total scores of tests less than one-tenth as long. The divergence of Achievement-Motor Age Quotients from 1.00 would be of amounts to be expected as a matter of chance in the great majority of cases.

The difficulty, of course, lies in our not having a test which measures endowment independent of training and one which measures, in the main, acquired differences. It seems wise, because of this and because of our present uncertainty of the significance of obtained differences between achievement and innate ability, to forego the use of the Accomplishment Quotient.

Another difficulty regarding the use of the Quotients must also be mentioned. No Quotients hoping to determine mental qualities are reliable when used with children above their 14th year. The reason for this is that the growth of intelligence above that year is very small. Applied to Physical Education, we must ask, at what Chronological Age does native motor ability increase but very slightly?, and hence at what age is it unsound to use a motor ability score? Until this is ascertained we stand on even weaker ground than the people dealing with the mental subjects.

Having digressed for a moment, let us now go back again to comparing our student performance to those of their peers for the pur-

¹ Kelly—*Interpretation of Educational Measurements*, New York, World Book Co., 1927, p. 63.

² *Ibid.*, pp. 193-209.

pose of deriving our High Jumping Quotients. Instead of using age as our base of classification, we could also have compared Black, Brown and White with the average high jumping performances of students of like weight or of like height or of a combination of these, or according to some other base.

Had we used weight for our base, Black's High Jumping Quotient would have been either 94 or 96 depending on whether we used the 140 pounds divided by 150 pounds or the 52 inches divided by 54 inches method. Brown's would have been 113 or 104. If we had used the high jumping norms of each separate 10 lb. weight class within each age, as is suggested though not given in table IV, we would have received still other High Jumping Quotients.

Which of these bases should be used for classifying and comparing the performances of our college men students must be decided by following the general rule, that *that base should be used which is most highly correlated with differences of performances.*

Professor McCloy found that age and weight were the most influential factors in Physical Education performance among elementary and high school pupils. Doctor Cozens would set up norms for nine distinct groups of college men students based on nine types of bodily builds. It would seem that for college men, age should always be a base of comparison, with perhaps separate weight or height classification within each age group.

Besides deciding whether the peers to which comparison is to be made are to be students of like age, like grade, like weight, etc., we must also determine whether these groups (from which the norms are derived) shall be those of their own Physical Education section, of all the enrolled student body, of all student body, of all students having taken Physical Education in the past in that institution, or of an unselected sample of college men in the whole of the United States. In table VI where we have the distribution of high jumping grouped according to "grade," i.e., College Freshmen, we are shown the peers for comparison of students Black, Brown and White. Columns 5 and 7 give us a chance of comparing the high jumping of Black, Brown and White with the other students in section 5 and in column 9 the peers are students of the entire enrolled Freshmen class.

It would seem best, under normal conditions, to compare our individual student's performance with those of the enrolled Freshmen when "grade" is the base of comparison, and with the enrolled student body, or with past performances of erstwhile students in that college, when using some other base of comparison.

The matter of deciding on which group to use within each base of classification is essential in any marking system based on achievement. With our marking system consisting of A, B, C, D, and F, and with a desire to distribute these according to the normal curve,

how shall Black, high jumping 56 inches, be marked and how shall White, high jumping 44 inches, be marked? Should our sections be grouped homogeneously and should Black, who high jumped 56 inches, be with a group all of whom are able to jump over the 55 inch mark, his high jump mark would be a low one, while White, who high jumped but 44 inches, and were he in a group none of whom exceeded 44 inches, would be ranked high and consequently would receive a high mark for high jumping. On the other hand were a larger unit than a section used for comparison purposes, say the enrolled Freshman class, or all the 18 year olds taking Physical Education at that time, the student with low motor ability would always receive a low mark. This, of course is a fatal thing for instructional purposes, though administratively it is not only defensible but justifiable. The final answer to this marking dilemma has not, as yet, been answered.

The question is often raised whether local or whether national distributions should be used for comparative purposes. It would seem safe to say that if diagnosing and instruction are the prompting influences for the grading of our students, the local distributions, or the norms derived from them, serve as well, if not better, than the national ones. Showing the relationship between your college men and some nationwide distribution or its derived norm is justified only when we desire to compare the achievements of students of one college with those of another, or when the student measured has no similarly envired peers for comparison.

So far we have seen one method of scoring achievement, that is, by a score showing the relationship of that performance to a norm of some defined group. We have also seen the necessity of defining who the peers of the student to whose performance we wish to give an achievement score shall be.

Let us now study the deviation method of grading. The simplest way of showing the position of a student's performance among the performances of other students is to rank the performances. Referring to Table VI, Column 2, we see that the student high jumping 59 inches would be first on the list, the student jumping 58 inches would be second, and so on till we come to the student jumping merely 42 inches, whose rank would be 50, or we could reverse the process and give the student high jumping 59 inches a rank score of 50 and the student jumping 42 a rank score of 1.

Such a ranking does not, in itself, help us out very much in grading students, as we understand the word "grading." A somewhat better scheme would be to find out the percental ranking of each score or, still further, to divide the total number of students into deciles or some other equal unit and grade the student performances according to the unit into which they fall.

Black's high jump score has a rank of 35.5⁴ counting from the lowest to the highest score. Dividing 35.5 by 50 and multiplying by 100 to eliminate the decimal point, we get a percental score of 71.0⁵ for Black. In like manner, Brown's score would be 93.0 and White's would be 7.0. Or we could give a score of 10 to all these located in the lowest 10 per cent of the high jump distribution, a score of 20 to those between the 10 percentile and the 20 percentile and so on. Or we could, were we to desire to give marks A, B, C, D, and F, give an A to the 10 students ranking highest, a B to those 10 standing next highest, etc. On this basis, Black would receive a B, Brown an A and White an F, and you would be giving as many A's as B's as C's and so on.

This is not a very fair method of grading, for it assumes that an inch of difficulty low down on the scale is the same as an inch of difficulty higher up on the scale. It assumes that an inch of improvement from 44 to 45 is of the same difficulty as an inch of improvement from 54 to 55 inches. This, of course, is not true if we can assume that the difficulty value of a performance or an improvement can be gauged by the number of persons capable of reaching that performance of improvement, and this seems a fair assumption. In the percentile method, the units are not equal on all parts of the scale in the truest source. Thus the differences in per cent tell us almost nothing about the differences in difficulty. What we need, then, besides the actual performance or improvement score is a score of the relative difficulty of that achievement.

The T-Scale technique of Doctor McCall gives us that. A T-Scale unit is the same, as far as difficulty is concerned, regardless of where on the scale it may be found. Its construction is based on the assumptions (1) that the per cent of the people capable of performing an achievement tells us its difficulty, and (2) that the variability of achievement (high jumping in our illustration) follows a normal curve of distribution. Our saying that the T-Scale score gives us the difficulty value of a performance is only roughly correct, however, for all distributions are not normal. But this second assumption is sufficiently met by using only students of one grade or of one age for comparison. It is because a single section of the Freshmen taking Physical Education may not show a normal high jumping (because so few students are measured) distribution that it is wise, at times, to take a larger group for comparative purposes.

You will recall, that the scores on a T-scale are obtained by plac-

⁴ Thirty-two students passed the high jumping mark of 51 inches. Six students, all having high jumped 52 inches and all having failed to clear 53 inches, have equal claim on the ranks of 33, 34, 35, 36, 37 and 38. The fair thing to do is to give them all the same rank. This is done by averaging these ranks, that is adding them and dividing them by 6. This nets a rank of 35.5 for each of the six students.

⁵ There are other methods for arriving at a percentile rank score, but this simple method will suffice for our illustrative purpose here.

ing the performance scores into a frequency table, by computing the per cent of cases in the distribution preceding plus one-half those reaching each score made, and by converting these per cents into T or Standard Deviation scores, using minus 5 Sigma as the Zero point. This is illustrated in the first 5 columns of table VI. Referring to column 5 of that table, Black's T-scale score for his high jump achievement at the beginning of his freshman year is 55.0, Brown's is 64 and White's is 34.5. Notice the base here used is that of Section 5.

The T-scale scores, because they are comparable, can be treated arithmetically as any numerical figure. This does not mean that to obtain a T-scale achievement score for a student based on the performances of several kinds of activities, such as high jumping, chin-ning, soccer kicking for distance or whatever other events have been tested to give a valid, reliable and objective test for all-around motor achievement, all that needs to be done is simply to add the T-scale scores obtained for each activity. The tests must be weighted before this summation and averaging can take place. They must be weighted (1) inversely as their Standard Deviation; (this is done in order that the units of measurement may not be a determining factor); (2) as to their importance for the composite desired (this being a matter of judgment); (3) according to their reliability; and (4) according to their independence of the other.

The combination of these four weighting factors into one weight for each test is most neatly accomplished by a multiple regression equation, connecting the three measures with an independently determined criterion measure of general physical education achievement. Adding the weighted scaled scores, we obtain the final score for each student.

Having, thus far, seen the two more important methods of scoring the relationship of a student's performance to those of his peers, and in that way of interpreting individual records, we will now give consideration to the translation of these derived scores into grades.

We have seen, that a student's achievement score can have been derived (1) either by relating his performance to those of others either in the form of Quotients or in the form of scaled scores, or (2) by comparing one of his performances with another of his performances achieved at another time.

In the former case, we could place the Quotients of the students into a frequency table, and, using the A, B, C, D, F system of marking, distribute these in accordance with the normal probability curve, that is, giving approximately 7, 24, 38, 24 and 7 per cent respectively of the letters mentioned.

Using the T-scale method of scoring, we could assign letters to scores as given in table VII. Table VI, column 6, gives us the distri-

bution of the high jumping records of students in section 5 at the close of their Freshman year. According to this, Black with a T-scale score of 56 would receive a B, Brown an A and White an F.

It seems a fairer method to grade students on the difference between their performances than on one single performance. Let us look at some of these grading schemes where the "difference" is taken into consideration.

We see from table I, that students Black, Brown and White have increased their high jumping performance 4, 3 and 3 inches respectively. Were we to desire to mark our students on their actual improvement for that year, we could, were we to use the A, B, C, D, F system of marking and were these to be distributed in accordance with the normal probability curve, make a frequency table of the increases in high jumping of that Physical Education section of which these three students are members—(or whatever base is used)—as is done in table VIII, and distribute these letters as is shown in the fourth column of that table.

We could also scale these differences according to the T-Scale technique, as is shown in table VIII, column 3, and using the scaled scores as shown in table VII, we would obtain the results shown in column 4 of table VIII. As you see, there is a perfect agreement between the two styles of marking. According to this marking system, Black would receive a C, Brown a C and White a C.

You will notice at once, that marking student achievement on the basis of the differences in performance alone is not a fair method. It does not take into account the actual sizes of the high jumps, it assumes that an increase of three inches is of the same difficulty regardless of where on the scale this might be, and it makes possible for a student to purposely do poorly on his initial test so that his increase might be the greater. This crude method of grading is not recommended.

We can also scale the scores on the initial test, then, using this same scale, assign each student with a scaled score equal to his final test performance. Subtracting the scaled initial test score from the scaled final test score, we obtain a difference in T-scale units. These can be placed into a frequency table and graded according to their position on the scale.

This method of grading would give us, according to table VI, column 5, for Black 64.0 minus 55.0 or 9.0; for Brown 73.5 minus 64.0 or 9.5; and for White 41.0 minus 34.5 or 6.5. These scores bring out the fact that even though Black has bettered his high jump by 4 inches as compared to only three by Brown, Brown's improvement score is greater.

Doctor Brace^a has given us two other methods of marking. In the first, both the initial and the final test scores are obtained from the scaled initial test, the scale scores are added and the sum of these is then divided by 2. Black's high jumping improvement score would be 55.0 plus 64.0 divided by 2 equals 59.5; Brown's would be 68.75 and White's 37.75 or B, A, D respectively.

The second method of Doctor Brace, which he tells us he used with his students, takes into consideration all the three factors of the initial test, the final test and the difference. The initial test is scaled and the scores obtained. The final test performances are given scores from the initial test scale. The differences are calculated in inches and scaled. The three scaled scores are then added and divided by 3. Black's high jump achievement score would be 55.0 plus 64.0 plus 53.5 (table VIII, column 3) this sum to be divided by three giving 57.5. Brown's score would be 61.5 and White's 40.8. This seems a fair method of marking high jumping achievement, since it takes into consideration both the initial and the final performances and the improvement in the performances.

Another method would be to grade according to the difference found between the scaled student score of the first high jump with the freshly scaled student score of the second high jump. According to table VI, column 5 Black's T-scale score is 55.0, according to column 7 of the same table, his score is 56. This is an increase in his high jumping performance of 1.0 T-scale score. Brown in like manner has increased his by .5 and White has decreased his by 1.0 T-scale score.

In this sort of calculation, a score increase of 0.0 means the betterment has kept pace with the "average" increase of the section. An increase greater than that would mean a faster progress and a decrease would mean a slower progress than the average of the section. The question arises as to whether a student progressing slower than the average of his peers should be penalized or whether we, recognizing that the consistently lower performance probably means a slower growth or lesser innate ability, should take this into consideration in our grading. The whole question of whether to grade according to achievement alone, or whether to take into consideration the student's innate ability has already been touched upon when we discussed the question of the use of the homogeneous section versus the use of the whole class for purposes of grading, and also when we gave consideration to the Accomplishment Quotient. The same sort of criticism leveled against the use of the Accomplishment Quotient is appropriate here.

The scores we have been obtaining so far were based on the dis-

^a Brace, D. K.—"Possibilities of Tests in Physical Education," *American Physical Education Review*, 32: 229: 506-513.

tribution of the achievements of students in a section of 50 students. We might also have pooled all the enrolled freshmen high jumping performances and based our T-scale scores on these. This is illustrated in Table VI, columns 8 and 9. We have already discussed the difficulties involved in basing our scaled scores on the performances of some small section and on the total student body classified according to some common base, so this needs no repeating here.

What we have illustrated with regard to high jumping achievements, can be applied to any other kind of physical education achievement or to a battery of tests measuring general all-round Physical Education Achievement. To summarize, we have seen how "achievement" might be interpreted and scored; we have seen how relationships might be shown and scored; we have seen how single performances and differences between performances may be graded; and we have discussed the various bases for comparison and grading. This in substance, reviews for us the several methods of grading student achievements in Physical Education Activities.

Table I.
Characteristics of three students of the P.E. Section 5.

Name	Age	Weight in Pounds	High Jump Score in Inches	
			Beginning of Year	End of Year
Black	19	150	52	56
Brown	18	150	56	59
White	22	190	44	47

Table II.

Age norms for high jumping of all enrolled freshmen	
Age	Height in inches
16	47
17	50
18	52
19	54
20	56
21	57
22	58
23	59

Table III.

Weight norms for high jumping of all enrolled freshmen	
Weight in Pounds	Height in Inches
110	44
120	47
130	50
140	52
150	54
160	55
170	56
180	54
190	52

Table IV

Age-Weight norms for high jumping of all enrolled freshmen					
Age	Weight in pounds				
	110	120	130	140	150
16					
17					
18					
19					
20					
21					
22					
23					

Table V

High Jumping of 3 students	
First	Second

Table VI

High Jumping of 3 students		High Jumping and T-Scale Scores								
First	Second	Section 5						All enrolled Freshmen		
		From beginning of year distribution				End of year distribution		Beginning of year distrib.		
		1	2	3	4	5	6	7	8	9
		Inches	f	Number exceeding plus ½ those reaching	Per cent exceeding plus ½ those reaching	T-scale Score	f	T-scale Score	f	T-scale Score
		62							2	80.5
		61					1	73.5	3	77.
		60					1	69.	7	74.
	Brown...	59	1	.5	1.	73.5	2	65.5	8	71.5
		58	1	1.5	3.	69.	3	62.5	10	69.5
		57	1	2.5	5.	66.5	4	59.5	10	68.
	Brown....Black....	56	2	4.	8.	64.	5	56.	10	67.
		55	2	6.	12.	62.	8	52.5	10	66.
		54	2	8.	16.	60.	8	48.5	20	64.5
		53	3	10.5	21.	58.	5	45.	40	63.
	Black.....	52	6	15.	30.	55.	3	42.5	60	60.5
		51	8	22.	44.	51.5	2	41.	70	58.
		50	7	29.5	49.	47.5	2	39.	90	55.5
		49	5	35.5	71.	44.5	2	37.	90	53.
		48	2	39.	78.	42.5	1	35.	100	50.5
	White....	47	2	41.	82.	41.	1	33.5	120	47.5
		46	2	43.	86.	39.	1	31.	80	45.
		45	2	45.	90.	37.	1	26.5	80	42.5
	White.....	44	2	47.	94.	34.5			60	40.
		43	1	48.5	97.	31.5			50	37.5
		42	1	49.5	99.	26.5			30	35.
		41							20	32.5
		40							10	31.
		39							10	28.5
		38							5	25.5
		37							3	23.
		36							2	19.
		N	50				50		1000	

Table VII

Grades, T-scale scores and percent of normal curve involved		
Grades	T-scale scores	Approximate % of normal curve
A	65—100	7.
B	55—64.5	24.
C	45—54.5	38.
D	35—44.5	24.
F	0—34.5	7.

Table VIII

Improvement in high jumping of students in P.E. section 5			
Inches	f.	T-scale score	grade
8	1	73.5	A
7	2	67.5	
6	3	63.5	B
5	6	59.	
4	13	53.5	C
3	11	47.	
2	8	41.5	D
1	6	34.5	F

The Physical Education Building at the University of Rochester,¹ Rochester, New York

Part I

THE decision of the Board of Trustees of the University of Rochester to move the College for Men to a new site brought about an intensive study of the requirements of the various departments. This study included the Department of Physical Education and after considering its needs, the University Building Committee requested the head of this department, Dr. Edwin Fauver, together with the architects, Gordon and Kaelber, to carry on such research work and to visit such institutions as was deemed desirable. This was done and considerable data were collected, after which Dr. Fauver presented the requirements of his department to the Building Committee, which authorized the preparation of final plans during June, 1928.

This building is composed of four major units, viz. a gymnasium, natatorium, basket ball court, and base ball cage. It is located in close proximity of the athletic field, grand stand, tennis courts and other recreational facilities.

The approximate over-all sizes are 256'-0"x284'-0", separate public entrance having been provided for the gymnasium and basketball arena.

The construction of the building is fire-resisting, structural steel and reinforced concrete having been used throughout with the exception of roofs over the before-mentioned basketball court and cage.

The exterior is of Harvard brick trimmed with lime stone; granite is used for steps at entrances, and roofs generally are covered with slate, while windows are either steel or bronze depending on their locations.

Gymnasium:

The first floor of the gymnasium portion of the building is devoted to locker rooms, with a capacity of more than 1100 lockers, in addition to showers, toilets, towelng rooms, etc. Adjacent to the main entrance are the administration offices, such as rooms for the Director and Assistant Director, examination, clinic and laboratory,

¹ The Society of Directors of Physical Education in Colleges maintains a standing committee on Gymnasium Construction and Material Equipment of which Professor A. I. Prettyman, Hamilton College, Clinton, New York, is Chairman. This committee is responsible for this discussion of the plans of the gymnasium at the University of Rochester. Correspondence relative to gymnasium construction is invited.

A depository for gymnasium plans is maintained at the Library of Hamilton College. The plans of the gymnasium at the University of Rochester and many other institutions are on view to authorized representatives of organizations interested in gymnasium construction.

Athletic Association Offices and waiting room for the public. Walls generally are of salt glazed brick while floors are of concrete, except in showers, toilets and drying rooms where white vitreous tile is used. In offices the concrete is covered with mastic tile of colors harmonizing with wall surfaces. Below these locker rooms is the fan room which provides the necessary air changes.

The main floor is reached from the main entrance by a broad Travertine stairs which leads to a large foyer in front of the gymnasium.

This foyer affords sufficient space for circulation and access to public toilets, retiring rooms, etc. and is finished in light colored brick and terrazzo floor with recesses for trophy cases and seats.

The gymnasium proper is a room 87x85 feet in size, exclusive of instructor's office, with storage space for equipment at one side. The wall surfaces are salt glazed brick to a height of 7 feet, with light colored brick above, Durolithic mastic having been used for flooring. The entire room is well lighted by high windows and large sawtooth skylights.

The glass in windows and skylights is a lens-prism glass transmitting properly diffused light. At the north side of the gymnasium unit are located the five squash and handball courts accessible from both gymnasium and locker rooms.

These courts are 18 feet 6 inches wide and 32 feet long, the standard size adopted by the United States Squash Racquet Association. The floors and front walls are of maple while side and rear walls are constructed of yellow pine, the usual metal telltale being removable so courts may be used for handball. At the rear of these courts are spectators' galleries with stairs at each end of corridor.

Natatorium:

The Natatorium is located at the southwest corner of the physical education building so as to obtain the maximum amount of sunlight.

Here the windows and doors are of bronze to withstand the high humidity.

The pool, which is 75 feet long and 30 feet wide, is lined throughout with tile, scum gutters being provided at sides, and tiled recessed ladders are placed at opposite corners while dark colored tile strips indicate the swimming lanes. The floors around the pool are buff colored tile, harmonizing in color with the salt glazed and cream colored brick walls.

To reduce the resonancy of the room the underside of the concrete roof and beams projecting below same are covered with cork, in this manner combining insulation and sound absorption. This cork is covered with aluminum paint.

In addition to the pool, the natatorium has a spectators' seating

deck, with a capacity of approximately 450 seats exclusive of balcony. These seats are of concrete painted, and those near the pool are protected from splashing by a solid rail. Below the before-mentioned seating deck are the heaters, pumps, filters, room for chlorinator equipment, transformer room and switchboard room. The heaters have a capacity of 14,000 gallons per hour while the water purifying equipment consists of a Wallace and Tiernan manual control solution feed chlorinator. There is also space for future laundry and a passage around the entire pool for the purpose of inspection.

Students are compelled to pass through a foot bath when entering the natatorium, the swimming instructor's office being located at the side of this entrance.

Basketball Court:

This part of the building has separate entrance for the public. The court, which is 71 feet by 94 feet, 6 inches, is of Durolithic mastic laid over concrete floor, which in turn rests on the ground. Again ample room is provided for spectators; a sloping seating deck having been constructed at three sides of the court. This deck is of fireproof construction except the wooden seats, and has a capacity of approximately 1,950 seats. The floor area is large enough to allow for two practice courts placed crosswise while the court for competitive games runs lengthwise which permits of the installation of removable bleacher seats that increase the capacity by about 500. The large entrance lobby, where ticket and telephone booths are found, leads to a wide concourse from which access is obtained to the seating deck. From this concourse one may also reach the check rooms and public toilets which are located on both sides at lower levels. The before-mentioned lobby has a quarry tile floor and brick walls similar to those used in the Natatorium. Connection between the basketball court and the students' locker rooms is found at the concourse level. While competitive games are played largely in the evening, there is sufficient daylight from exterior windows and depressed bays.

The steel construction is exposed, trusses supporting wooden insulated roof. The interior of the basketball court is smooth tile painted, the over-all dimensions of the room being approximately 112 feet by 139 feet.

The playing space is equipped with wall drinking fountains and wall cuspidors for use of the players.

Over the lobby are located the rooms for both home and visiting teams, each having its own showers and toilets. Stairs from these rooms bring players directly into the court. Large unit heaters supplement the wall radiation and fans provide for the circulation of air.

Baseball Cage:

The size of the baseball cage is approximately 138 feet by 153 feet, with a clear height of 28 feet under the steel trusses. The floor is a dirt floor composed of sand, silt and screened clay. Space for jumping pits and pole vaulting is provided at one end. A cinder running track, 12 feet wide, is located on three sides of the cage and extends under the basketball arena covering approximately seven laps to the mile. Four large unit heaters similar to those in the basketball courts are found at the corners. Exterior windows and depressed bays glazed with pressed lens glass give an abundance of light. Large exterior doors permit access for mechanical rollers to keep both track and dirt floor in condition. Here again walls are lined on inside with painted tile and overhead electric lighting makes this particular unit of the physical education building useable for night work.

The total cubic contents of the building are 2,465,300 cu. ft., built at a cost of approximately 29 cents per cu. ft.

Part II

Comments on the Physical Education Plant at the University of Rochester after Six Months of Use

EDWIN FAUVER, M.D.

Professor of Physical Education, University of Rochester

The Physical Education plant at the University of Rochester was completed in the fall of 1930. In a study of this plant several facts should be kept in mind. First, it is an entirely new plant being one of a group of buildings erected on a new site for the Men's College of the University of Rochester. Second, it was planned to meet the needs of a well developed system of Physical Education. Third, it is to serve a group of about seven hundred men, which may soon be increased to a thousand. Fourth, it was necessary to limit certain dimensions in construction because of the funds that were available. Fifth, the compactness of the plant is also worthy of notice.

The system of Physical Education which had been developed and had been in operation for many years at the University so far as the physical activity is concerned provided for three different divisions. First, the required work; second, the intramural program; and third, intercollegiate athletics. In general the classes for the required work in Physical Education are held during the morning hours. The intercollegiate and intramural competition occurs in the late afternoon. Many years ago the old formal floor and apparatus work in the class periods was discontinued and there was substituted a program of physical activities, and instruction in handball, squash, wrestling, boxing, swimming, volleyball, basketball, and track, dur-

ing the indoor season, and soccer, speedball, basketball, football, track, and tennis for the outdoor season. Furthermore this program provided for the division of the class sections into small groups which rotate through all the activities under the leadership of one of the staff, so that each group gets definite instruction in many plays and recreation.

The building was planned with this program definitely in mind, and provides ample facilities at the present time for all these activities.

The building was planned also to take care of a rather comprehensive intramural program. It provides space for four simultaneous basketball or volleyball games, ample facilities for indoor track and field activities, swimming, wrestling, handball, and squash.

For intercollegiate athletics there are excellent facilities. Provisions are made for all track and field activities, spring baseball practice, and for football in stormy weather and late afternoons when lights would be required for outdoor work. Varsity basketball is provided for in a court with two thousand seats, and space for 500 temporary ones. The Field House also affords space for a golf driving net, archery, and horseshoes.

Inasmuch as Rochester has a centralized department, i.e., required Physical Education, Intercollegiate Athletics, and Student Health, in one department, the plant was built to provide for ample office space, examining rooms, and laboratory for the staff. The provision for a room in which gas ranges and heaters can be installed has made it possible, with a minimum of confusion, to serve a banquet for seven hundred people.

The plant has been in operation about six months and in general has met, to a very high degree, all demands made upon it. There are several features about which comments should be made. First, the arrangement for intercollegiate basketball is very unusual. This arrangement makes available a second gymnasium floor at all times except in the late afternoon, when it is in use by the varsity team. It eliminates the necessity of frequently moving in and out temporary seats, or installing them on the basketball court for the season, which would limit the playing floor to one court during the winter months when space is at a premium. The arrangement for dressing rooms is excellent, and makes it possible to keep the rest of the plant locked during varsity contests. Ample space is also provided for checking facilities. Second, the inclusion of five hundred cement seats in the natatorium has made it possible to keep the pool more sanitary since all spectators are kept in these seats.

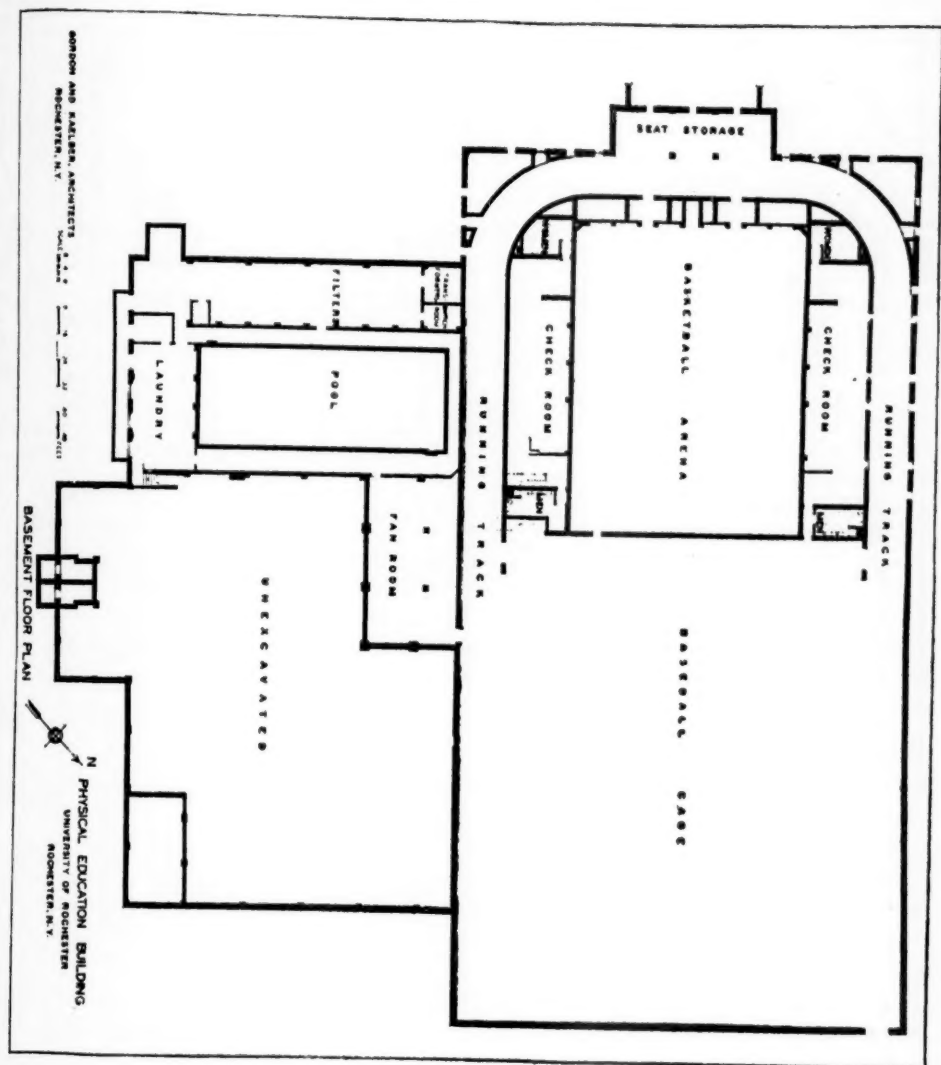
The initial request for fifteen handball courts and squash courts instead of six would have much better met our needs because the courts are already over-crowded. A movable telltale has been made

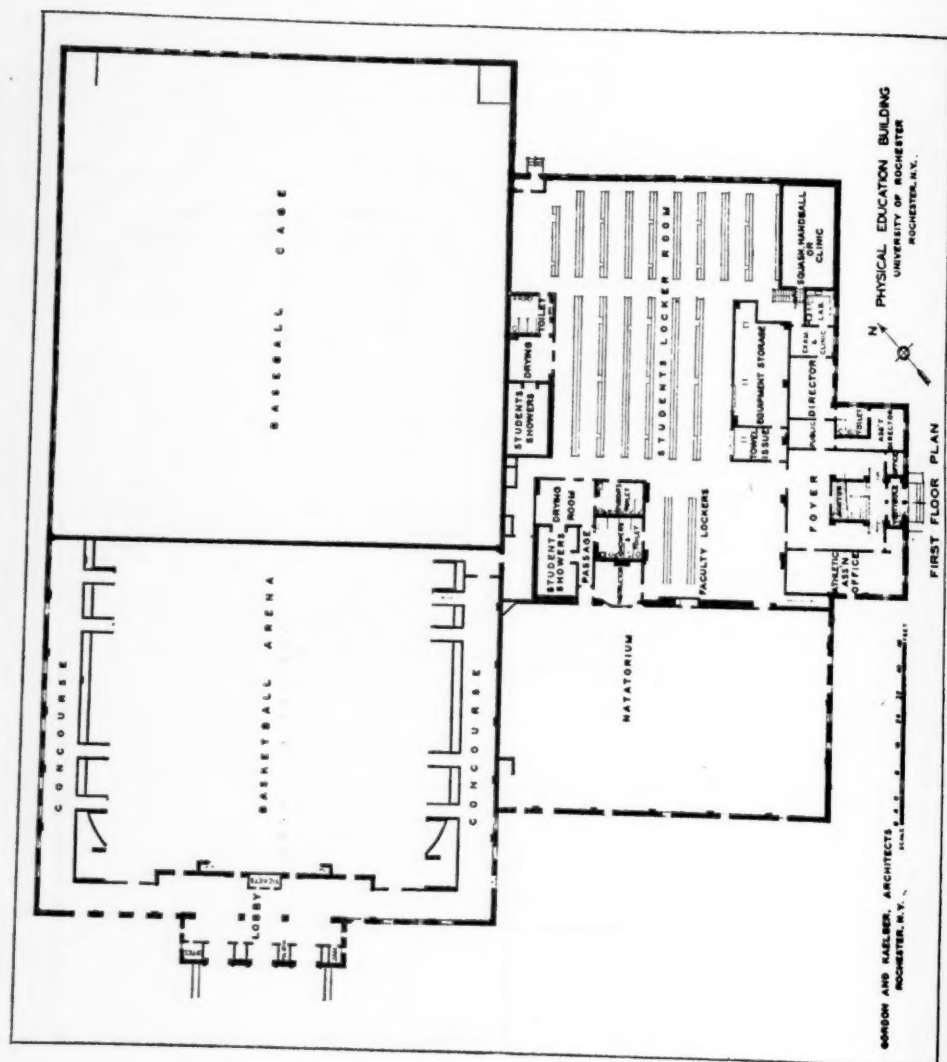
which can be removed or placed in position in a fraction of a minute when it is desirable to convert the courts from handball to squash or vice versa. The natural ventilation of these courts is excellent, and the gallery is exceedingly worth while for instruction purposes as well as for spectators.

The baseball area would be somewhat more serviceable if the dimensions could have been increased ten or fifteen feet in each direction. Also the gymnasium floor would be more effective if it were ten feet longer. This condition was anticipated but funds were not available to provide for the increase in dimensions. The stairway on the gymnasium floor should have been eliminated entirely. Also the two side doors leading from the vestibule on to the floor should have been eliminated and the center door should have been a double one.

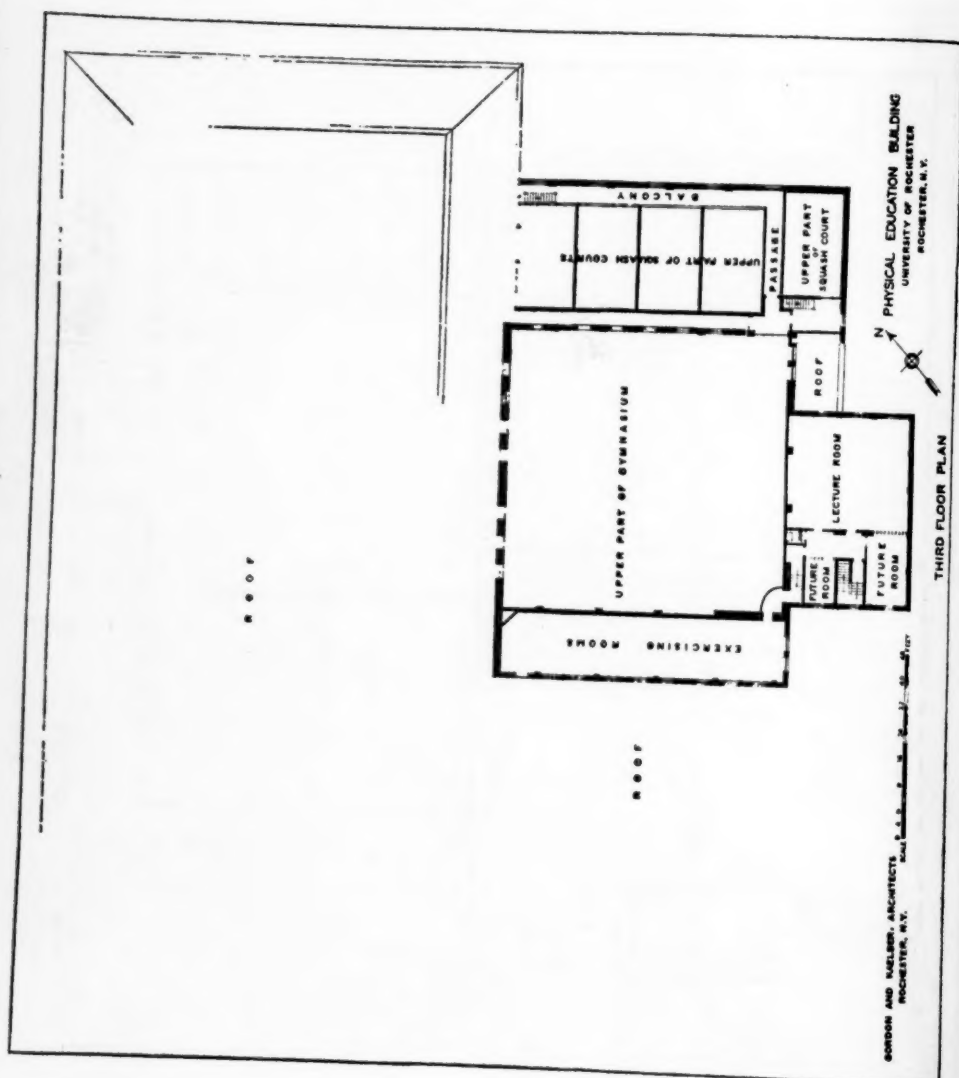
In a study of the facilities of the Physical Education plant one should keep in mind that the grandstand with a capacity of six thousand seats is located only a hundred feet distant and has provided for dressing rooms for varsity and visiting teams. If this space were not available, additional dressing rooms would be needed in the gymnasium. As it now works out, the dirt and confusion that goes with dressing rooms in the gymnasium is eliminated, and is transferred to a more convenient place, the stand adjacent to the competitive field.

Aside from these criticisms we have found in the use of the building for six months that it is very adequate to take care of the physical needs of 600 to 1000 students.









A Study of Relative Values of Thirty Important Activities in the Physical Education Program for Boys

Report of the Committee on Curriculum Research

Introduction

THIS, the third report of the special committee appointed at the annual meeting of the Society in 1927, is really the completion of the report for the second year's work. The report submitted to the Society at the December meeting in 1929, covered the college division only, since the statistics for the other grades had not yet been tabulated. Instead of undertaking further extensions of the work of the committee, the efforts during the past year have been devoted to completing the tabulations and analysis of the various ratings for each of the school grades from the first through the twelfth. This material is herewith presented in descriptive and graphic form. The charts presented, together with those included in the last year's report for the college division, give a complete picture of the evaluations of the various important activities in the physical education program from the first grade through the junior college.

It has been unfortunate that members of the committee have not been able to get together for personal consultation on the work. All consultation has necessarily been by correspondence. After getting as much advice as possible from the committee members and members of the society as a whole, the chairman has carried on the securing, tabulating and interpreting of the statistical data as best he could.

OBJECTIVES OF THE RESEARCH

Members of the Society will recall that the objectives of the study were to formulate a minimum set of activity subjects suitable for an all-round program of physical education and to evaluate these subjects, by school grades, on the basis of their relative contributions to the five great needs in child development:

1. Physical or organic needs.
2. Social or citizenship needs.
3. Psychological or mental needs.
4. Safety skills.
5. Recreational skills.

The committee has assumed that an activity in order to be worthy of a prominent place in the physical education program, should make

a positive contribution to each of these needs; namely, it should prove of distinct benefit to the individual;

1. From the standpoint of physical and organic growth and development and the improvement of body function.
2. From the standpoint of developing sound social and moral qualities, characteristic of a good citizen.
3. From the standpoint of developing sound mental attitudes and ability to think quickly and clearly as a result of stimulating and satisfying activities.
4. From the standpoint of the development of skills that make the individual capable of protecting himself and others in emergencies.
5. From the standpoint of developing skills valuable as carry-over hobbies for leisure time use.

WEAKNESSES IN THE PROCEDURE

Before detailing the statistical procedure followed, it will be well again to call attention to the fact that this entire study is based on purely subjective judgments or opinions of selected experts in the field. It would, of course, be unsound statistically to tabulate personal opinions and interpret them as objective facts. Repeated efforts were made to determine some objective basis for securing a satisfactory evaluation of activities. None of the methods suggested, however, seemed to offer any hope of securing strictly objective data, even though very elaborate and exhaustive surveys and studies were to be made.

It even seemed inadvisable to weight the various factors upon which contributions were based, since there are no satisfactory established criteria by which to judge them. For example, it would be desirable if physical contribution for a given grade could be weighted in relation to social, recreational and other contributions. Such a weighting, however, would necessarily have to be based again upon personal opinion since there are no objective criteria. If the weighting were determined by subjective judgment, it would make the results no more valid than if the actual scores were determined by subjective judgment.

The procedure followed in securing the personal opinion ratings seems reasonably justified on the basis that the opinions of experts in a limited field should have far greater weight in determining an educational program than the immature opinions of individuals of mediocre training and limited experience. Similarly, the grouped opinions of a number of such experts should be more representative than any one individual opinion. Accordingly a program based upon such composite opinions should prove educationally more sound than the curriculum usually established in terms of the opinion of the individual head of a department, or of a school administrator.

It should be kept clearly in mind, however, that the statistical

treatment of opinions presented in this study, gives merely a picture of the central tendencies of the judgments of specialists. The reader will understand that the report does not assume to be an objective statistical study.

PROCEDURE FOLLOWED IN THE STUDY

Members of the Society are referred to the last year's report, which appears in the 1929 Proceedings of the Society, for a detailed description of the method followed in securing the data that are presented herewith. The various steps in securing and tabulating the data are as follows:

1. The thirty activities were arranged under six main headings: aquatics, combatives, gymnastics, individual sports, rhythmic, and team games. It was assumed that a comprehensive program should include some activities from each of these main divisions. These activities were then evaluated by expert raters from the standpoint of their use in the boy's program of class instruction.

2. The raters were selected very carefully with the assistance of the state supervisors in nineteen different states, together with twelve prominent city supervisors in other states. Each supervisor selected the outstanding physical education specialist in each of the twelve grades in his state or section. This gave thirty-one groups, each consisting of twelve specialists, thirty-one for each grade, or a total of 372 raters, each of them an expert in his field.

Approximately fifty per cent of these raters returned the scoring charts. This naturally gives a relatively small number of opinions, but this is partly offset by the fact that each one selected, was an outstanding specialist in his field. Hence, the opinions should be proportionately valuable.

3. The scoring, as in the preceding studies, was on a basis of 0-10, the latter score representing maximum possible contribution made by any activity. Each rater confined his estimate to the one grade for which he had been selected.

4. The scores submitted by the various raters for each grade were catalogued under the proper headings, showing the contribution to each of the five factors, physical, social, psychological, safety and recreational. The median score of all the raters was then computed for each activity for each of the five contributions. Bar graphs were plotted for each contribution in each grade on the basis of these median scores. An average was then taken of the median scores of the five contributions for each activity. This was called the all-round contribution of that activity for that particular grade (Charts 10 and 16).

This all-round rating should be considered a very significant score, since it is a composite picture of the five different contributions of the activity. It was assumed that if raters judged an activity in a general way, there would be a tendency for them to over-emphasize some one phase to the neglect of others. For this reason, they were asked to break up the activity into contributions under the five headings so as to get a reasonable distribution of the evaluation. The average of these five would seem to present a fairly true picture of the general value of the activity.

For practical purposes, the all-round score would be used to determine the relative emphasis to be placed upon a given activity as compared with all other activities for a particular grade. This all-round ranking arrangement is reproduced in another form in chart No. 16, as indicated by the median score.

5. The scores are reproduced in summary form in chart No. 10 in which the median score contributions of the given activity are shown in parallel bar

charts, together with their average or all-round contribution. The activities are not ranked in this chart, but are left in the original order of classification under the heading of aquatics, combatives, etc. From this chart, it is possible to select the most valuable activities under a given heading, such as individual sports, on the basis of the all-round contribution score. It is also possible to determine at a glance those activities which make the highest contribution under a given heading, such as physical. This chart also portrays vividly the strong and weak points of a given activity. For example, it may show an activity with a contribution of 10 from the standpoint of safety, while its contribution to recreational needs might be as low as 1 or 2.

6. The next step in the statistical procedure was to determine for each activity in a given grade, the total range of the average scores in each contribution, together with the range of the middle 50 per cent of the scores. The spread of the middle 50 per cent gives some conception of the degree of agreement among the various raters. The smaller the range of the middle 50 per cent, the closer the agreement. This further eliminates the extreme and freakish scores at the top and bottom limits.

Averages of these middle 50 per cent ranges for the various contributions were then tabulated for each activity to indicate the estimated all-round value and range. Chart No. 16 presents this composite picture. The white bars indicate the total middle 50 per cent range; the black bars the average of the middle 50 per cent ranges; while the vertical white bar spots the median score. The activities in chart No. 16 are also arranged in order of descending rank on the basis of the median score for all-round contribution. At a glance the reader can get a vivid picture of each activity from the standpoint of its relative median rank; the degree of agreement as indicated by the average middle 50 per cent range; and the total range of the middle 50 per cent of the scores.

7. Having plotted the averages of activities by grades, the next logical step seemed to be to formulate a composite picture of these activity values on the basis of standard school divisions.

The school grades were accordingly divided into four divisions: 1. *Elementary* division, grades 1-3; 2. *Intermediate* division, grades 4-6; 3. *Junior high school* division, grades 7-9; 4. *Senior high school* division, grades 10-12.*

From a strictly statistical standpoint it would be a doubtful procedure to take the average of a number of different raters for different grades and combine them as a composite average for a school division. From a practical standpoint, however, the administrative problem of the principal or superintendent involves the selection of activities in terms of their greatest all-round contribution for the largest number of students or for the various grades involved. The administrator normally would call for the opinions of his expert teachers and would then take an average of their ratings. This is exactly the procedure followed in this study in determining the selection for a school division.

The median scores of an activity for a given contribution in each of the three grades were averaged. This constituted the division score of that activity for a particular contribution. Similar scores for each of the other contributions were then computed, and an average taken of the five contribution scores. This gave what is called the all-round contribution of that activity for the school division.

8. After these all-round scores had been determined for each activity, a new chart was plotted for the school division, arranging the activities in this revised order of rank. Chart No. 17 presents this revised picture. From it, the reader can see at a glance the relative order of importance of the various

* In reaching a decision on this procedure, the chairman of the committee consulted several educators. He is particularly indebted for advice to Dr. Frank C. Touton, Vice-president and Director of Educational Research for the University of Southern California.

activities for that particular school division. The validity of the procedure just described is more or less established by the fact that in most cases, there were very few marked jumps in rating from one grade to another within a school division. In fact, there was a surprising uniformity in scoring a given activity for the different grades in a particular school division, in spite of the fact that the ratings were made by different people in each case.

9. Chart No. 17 makes it possible to compare readily the value of a given activity in relationship to all other activities. It is difficult, however, to compare that activity with others in its particular division. Chart No. 18 was accordingly constructed with activities arranged in order of descending rank under each of the original classification headings of aquatic, combative, gymnastic, etc. This makes it possible readily to select in a given classification those activities of greatest value.

INTERPRETATION OF CHARTS

Part I. Elementary Division, Grades 1, 2 and 3

The first significant finding is that a very small percentage of the activities included in the study are considered valuable for the first three school grades. In fact, the number was so small that it seemed inadvisable to formulate charts other than the summary chart No. 17 for the three grades combined. Only five activities were recognized as making any contribution in the first grade, namely, gymnastic games and relays, folk dancing, swimming and diving, free exercises and marching. These are arranged in order of importance. In the second grade, the same five activities were recognized in the same order. In the third grade, the same five again appeared in the same ranking order with the addition of modified games, playground ball, track and field and tumbling and pyramids.

An average of the scores for the several activities for the first three grades gives the following ratings on a scoring basis of 0-10, 10 being the highest possible score:

1. Gymnastic games and relays	7.8
2. Modified games	5.4
3. Folk dancing	4.5
4. Swimming and Diving	4.4
5. Playground Ball	2.4
6. Free exercises	1.5
7. Track and Field	1.2
8. Marching	1.2
9. Tumbling and Pyramids	1.0
10. Gymnastic dancing	1.0

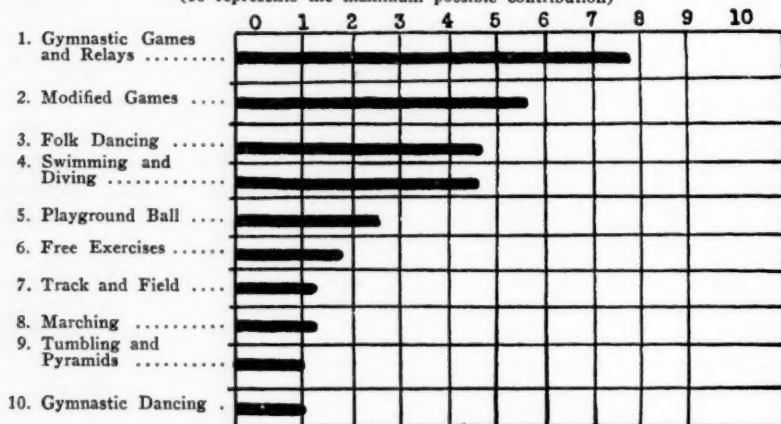
The raters for the first three grades were strongly urged to insert additional activities that they thought should be added. The additional activities most frequently mentioned were interpretive rhythms, singing and dramatic games, story action plays, stunts and self-testing activities.

It might be questioned in view of this showing, whether there is not a tendency for us to have a very limited or meager program of

comprehensive physical education in the primary grades; this, in spite of the fact that at early ages, the child is most susceptible to training in many of the simpler coordinations involved in self-control and adjustment to surroundings.

CHART NO. 17—Grades 1-2-3
Ranked Averages of Median Scores for All-Round Contribution
 (Based on scores of 35 raters)

Curriculum Research—Boys' Physical Education Program—Elementary School Division
 (The scores are arranged in order of descending rank. The bars represent the averages of the three median scores for grades 1-2-3)
 (10 represents the maximum possible contribution)



(All the remaining activities received zero scores.)

Part II. Intermediate Division—Grades 4, 5, 6

In the intermediate division also, it is to be noted that several activities received very low scores; a few in fact, were left out entirely: fencing, golf and water polo. Squash and squash tennis, archery, basketball, wrestling, boxing, football and touch football received a mere trace of emphasis, only a fraction of one point in score.

Fourth Grade

Distinctly large contributions to *physical* development were scored in the fourth grade for swimming and diving, gymnastic games and relays, modified games, track and field and playground ball; the scores ranging from 6 to 9. In social contribution gymnastic games and relays, modified games and playground ball scored highest, 6 or better. In *psychological* contribution, playground ball, modified games and gymnastic games again scored highest. In *safety* contribution, life saving, swimming and diving received the only high scores. In *recreational* contribution, swimming and diving, modified games, playground ball and gymnastic games scored 6 or better. In *all-round* contribution, swimming and diving, gymnastic games, modified games

and playground ball were the only ones receiving scores higher than 4.5. This would indicate that only four of the activities have a significant contribution in the fourth grade.

Fifth Grade

The *physical* contribution scores of 6 or better were in gymnastic games, swimming and diving, track and field, soccer, playground ball and modified games. In *social* contribution, modified games, gymnastic games, playground ball, volleyball, soccer and life saving, each received scores of 6 or better. In *psychological* contribution, gymnastic games, modified games, playground ball, soccer and swimming and diving received the high scores. In *safety* contribution, swimming and diving, life saving and track and field were the only ones scoring 6 or better. In *recreational* contribution, swimming and diving, playground ball, tennis, modified games, soccer and horseshoes, received the best scores.

In *all-round* contribution, swimming and diving scored the highest with a rating of 7.5. Modified games and playground ball were second each with scores of 7. Gymnastic games and relays came next with scores of 6.6, soccer with a score of 6.5, while track and field with a score of 5.8 was the only other activity rated better than 5.

Sixth Grade

In *physical* contribution the activities rating 6 or better were swimming and diving, gymnastic games and relays, track and field, playground ball, volleyball, soccer and speedball. In *social* contribution, gymnastic games and relays, playground ball, baseball, soccer, speedball, volleyball, life saving and modified games took the lead. In *psychological* contribution the leaders were playground ball, life saving, gymnastic games, baseball, speedball and swimming and diving. In *safety* contribution, life saving and swimming and diving alone scored better than 6. Each of these received a rating of 10. In *recreational* contribution, swimming and diving, volleyball, horseshoes, tennis, playground ball, modified games, soccer, handball and gymnastic games were outstanding.

In *all-round* development, swimming and diving led with a score of 8.4. Next in order came playground ball with a score of 7.4, gymnastic games with a score of 7.2, volleyball with a score of 6.8, life saving with a score of 6.2, speedball with a score of 6.1, baseball with a score of 5.9, modified games with a score of 5.7, soccer with a score of 5.4, track and field with a score of 5.4, and tennis with a score of 5. All others rated less than 5 in all round contribution. The all-round contributions for each grade are shown graphically on charts numbered 16-A. The median scores are indicated by the vertical white bar inserted in the horizontal black bar. This chart also indicates by

the solid black bar, the average of the contributions to each factor, as scored by the middle 50 per cent of the raters. White horizontal bar indicates total range of scores of the middle 50 per cent raters.

CHART NO. 10-A—4th Grade
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

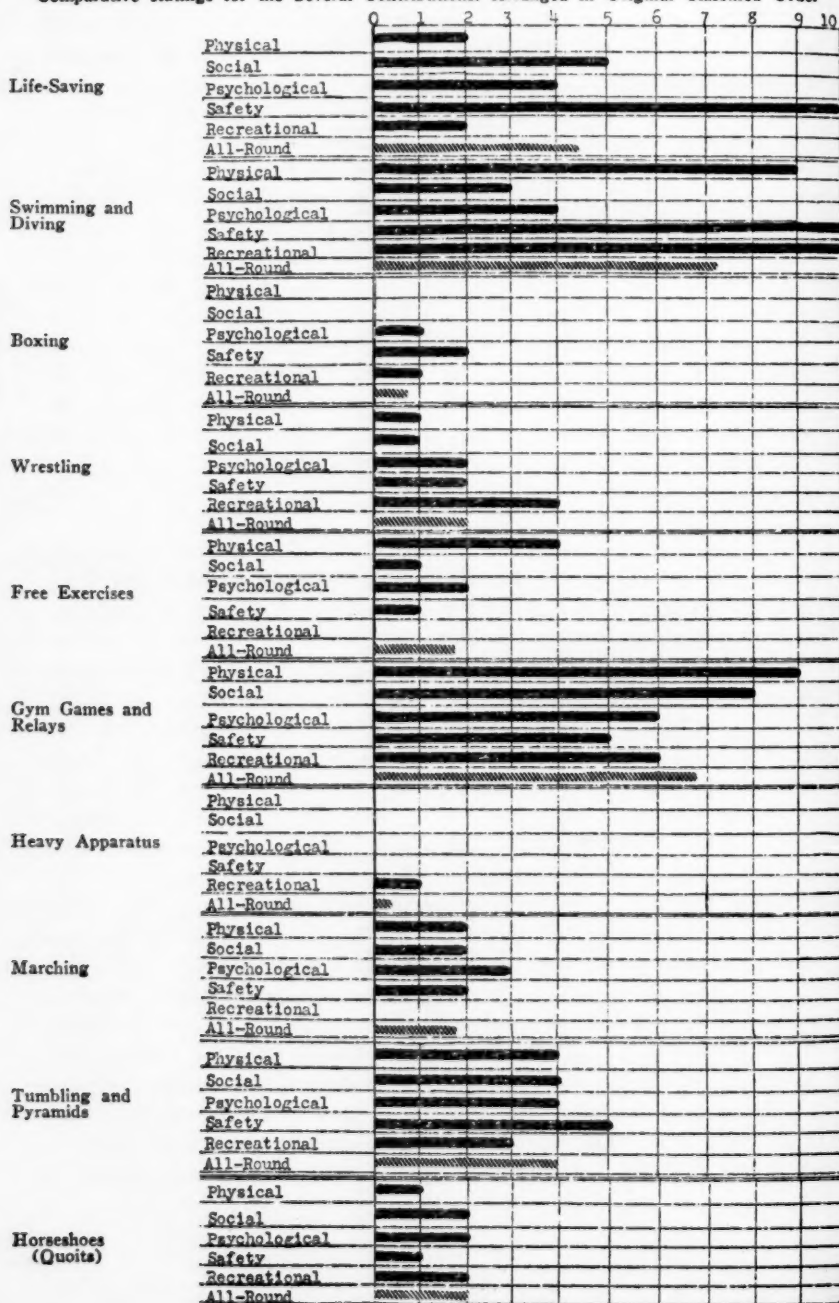
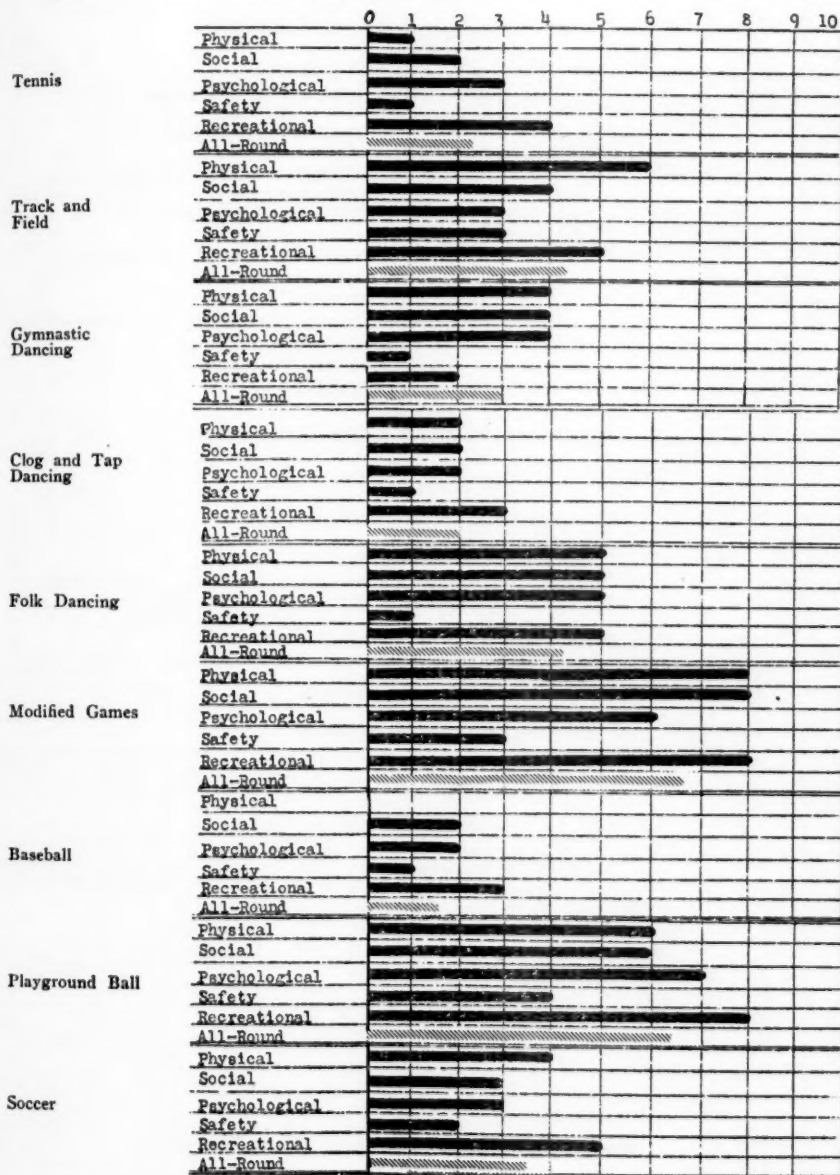


CHART NO. 10-A—4th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order



Touch football, volleyball, water polo, fencing, archery, golf, handball, squash and squash tennis, basketball, football and speedball received no scores.

CHART 16-A—4th Grade

Ranked Median Scores for All-Round Contribution
 Chart shows median score; average middle 50% range; and total middle 50% range.
 (10 represents maximum possible contribution)

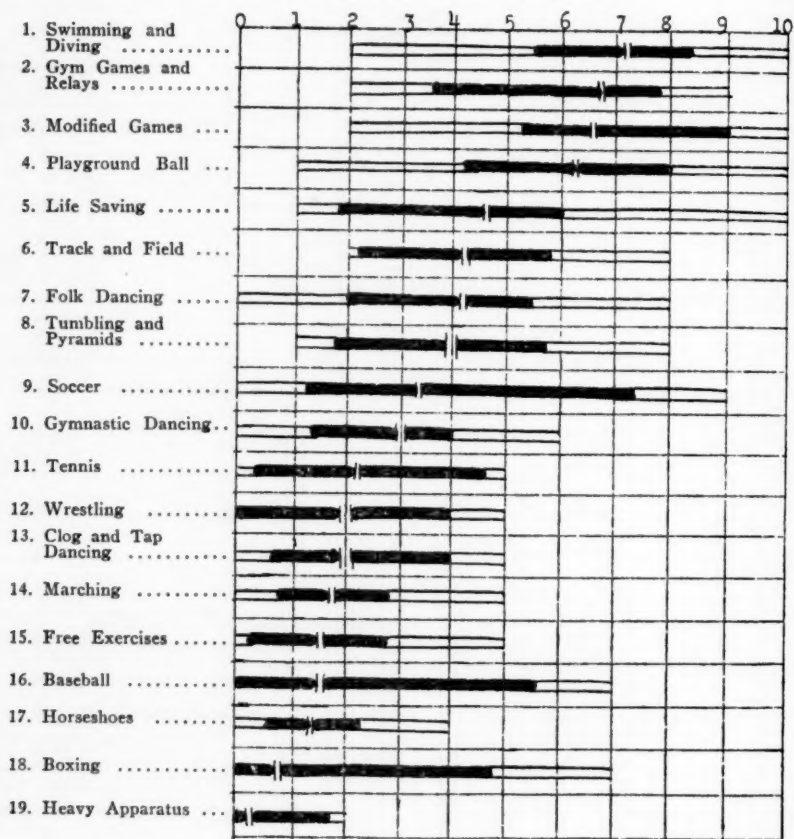


CHART NO. 10-A—5th Grade

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

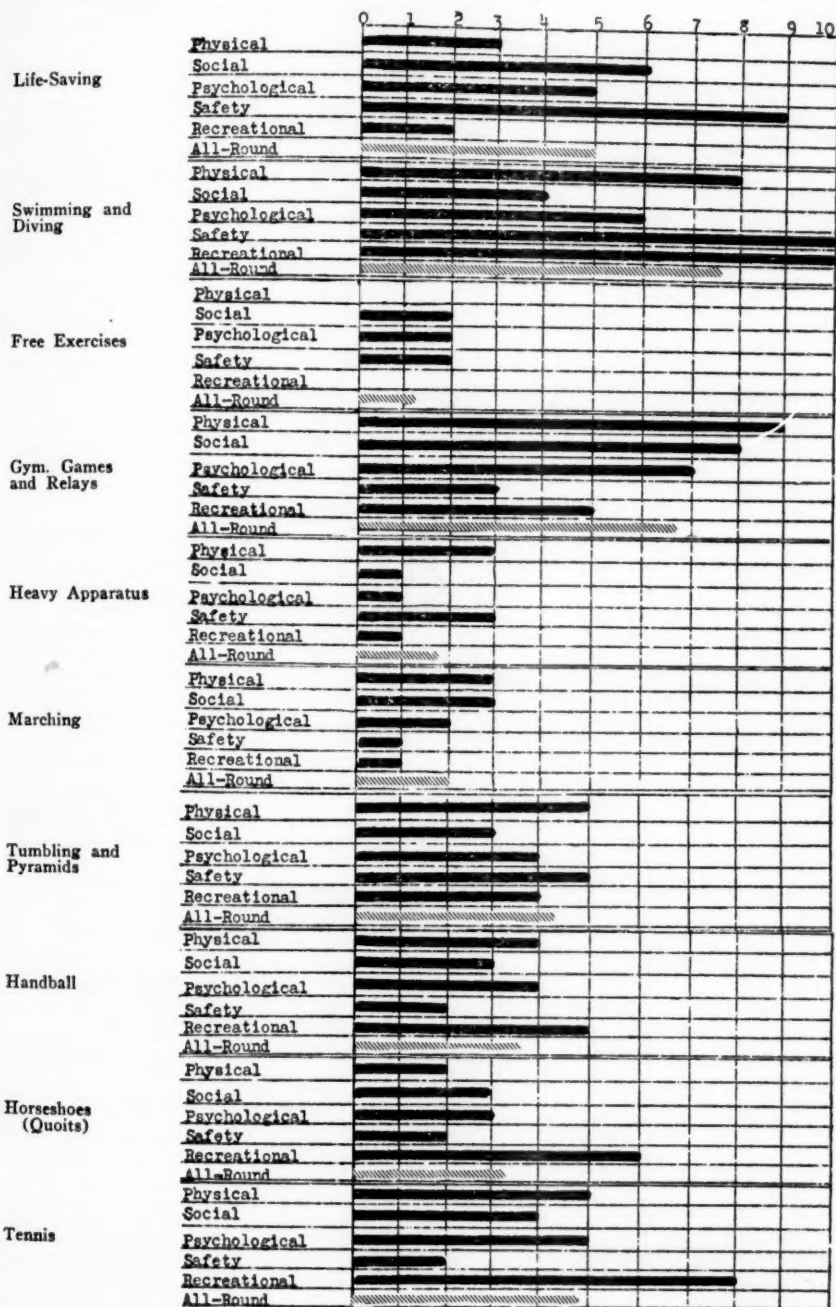


CHART NO. 10-A—5th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

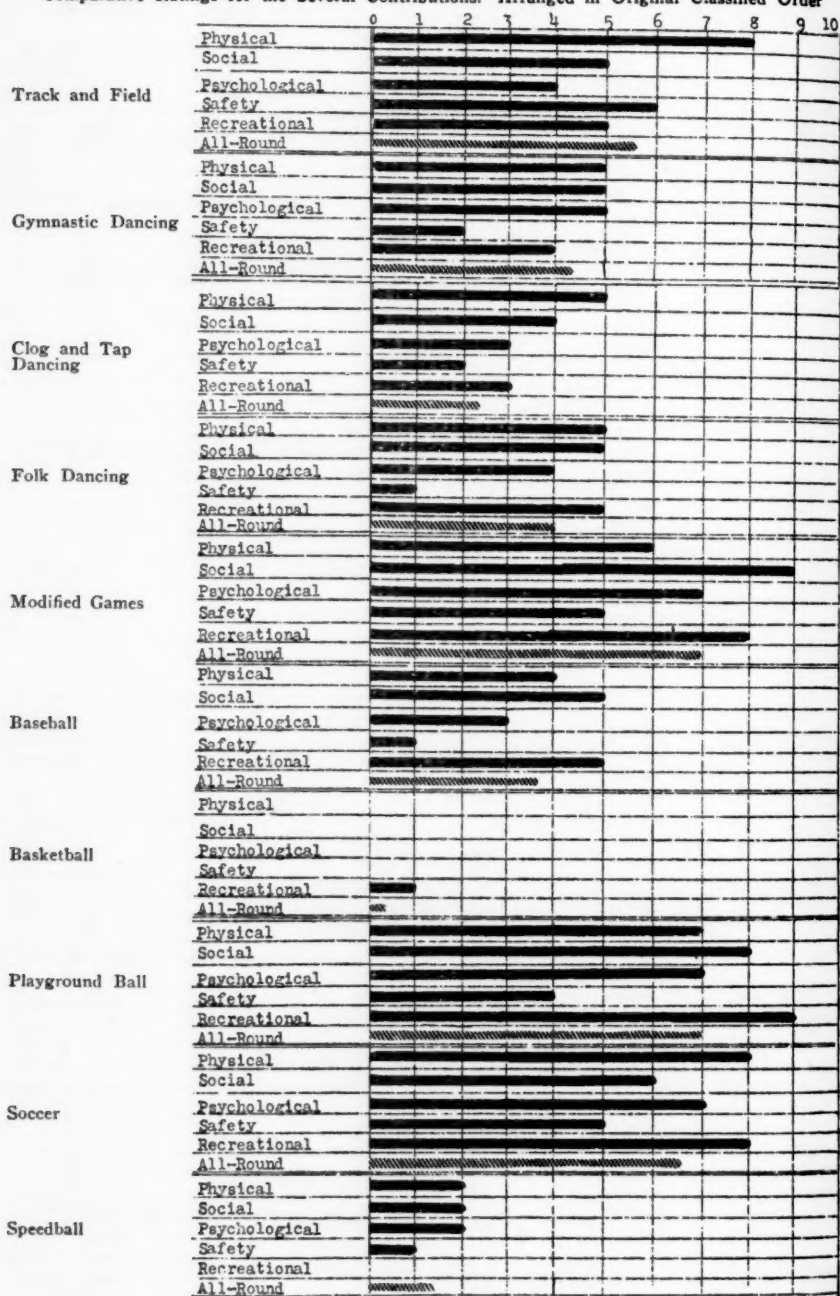
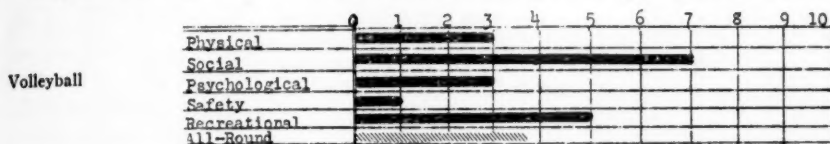


CHART NO. 10-A—5th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order



Boxing, fencing, wrestling, archery, squash and squash tennis, football, touch football and water polo received no scores.

CHART NO. 16-A—5th Grade

Ranked Median Scores for All-Round Contribution

Chart shows median score; average middle 50% range; and total middle 50% range.

(10 represents maximum possible contribution)

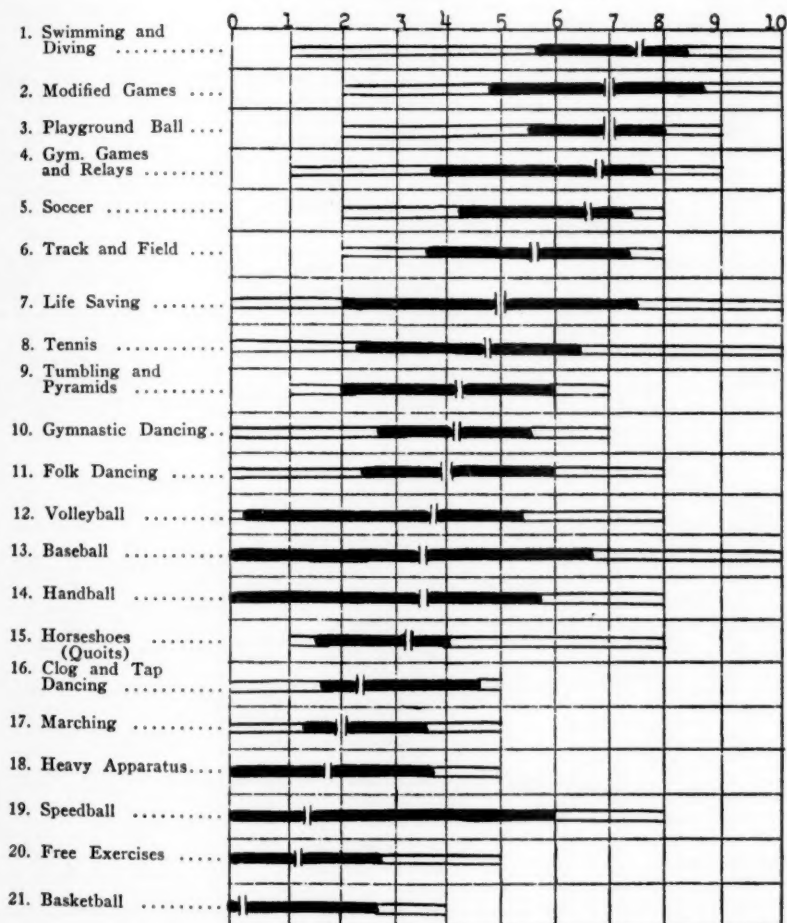
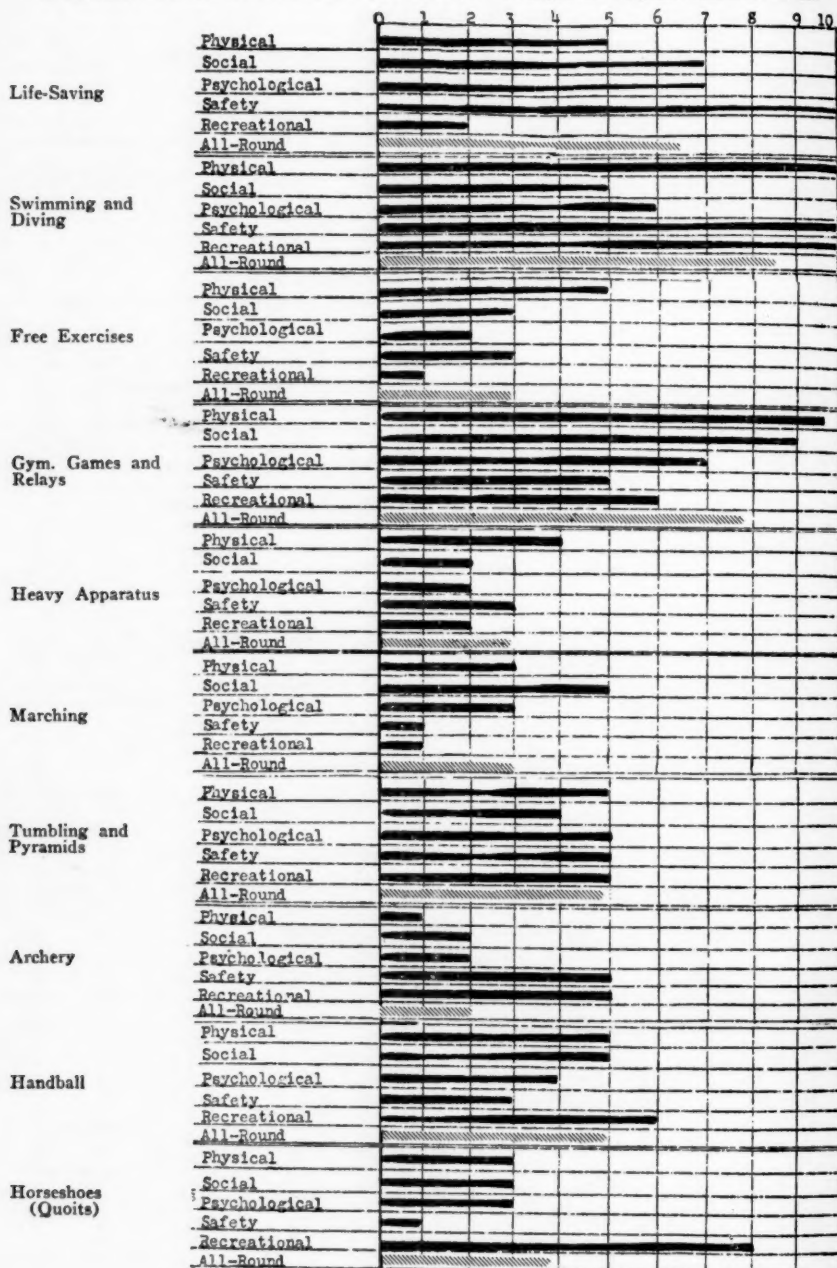


CHART NO. 10-A—6th Grade
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order



RELATIVE VALUES OF BOYS' ACTIVITIES

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CHART NO. 10-A—6th Grade (Continued)

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

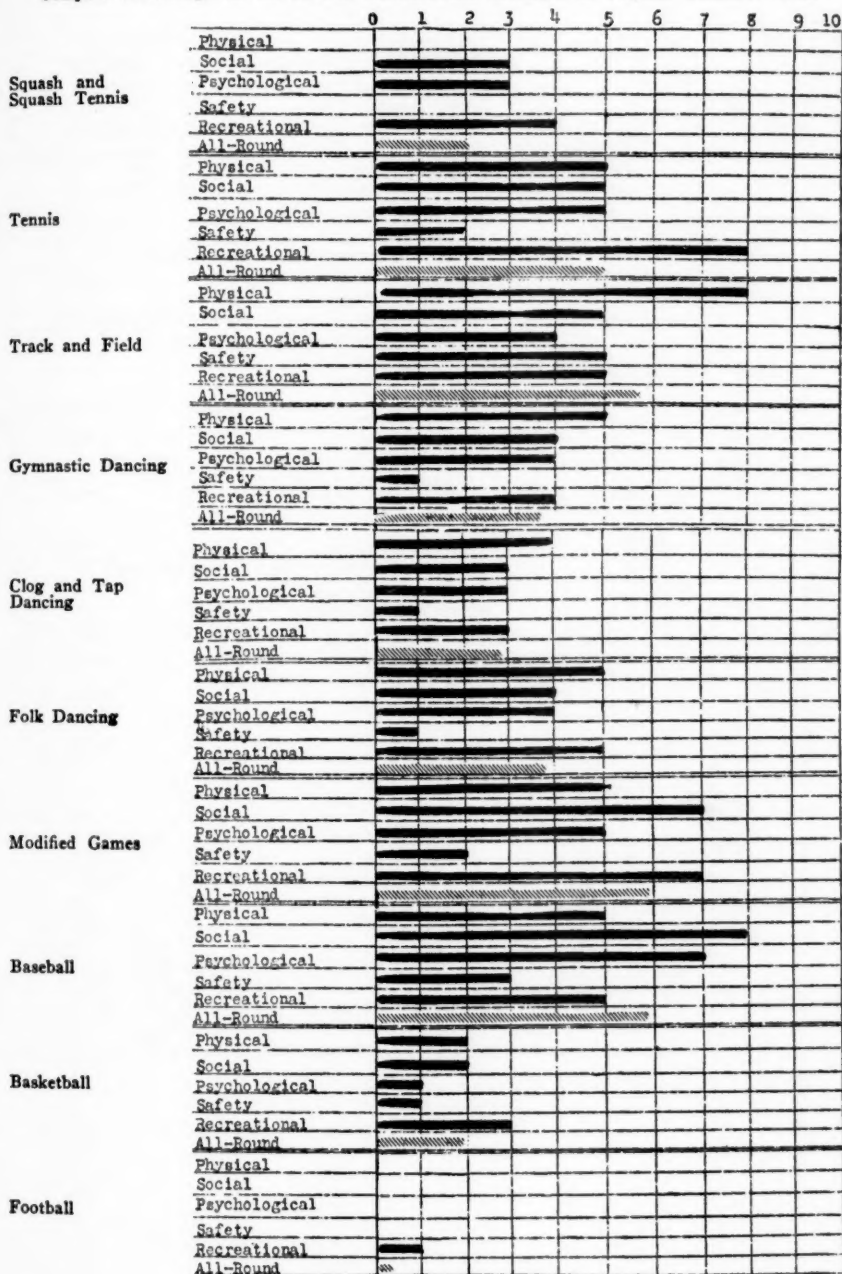
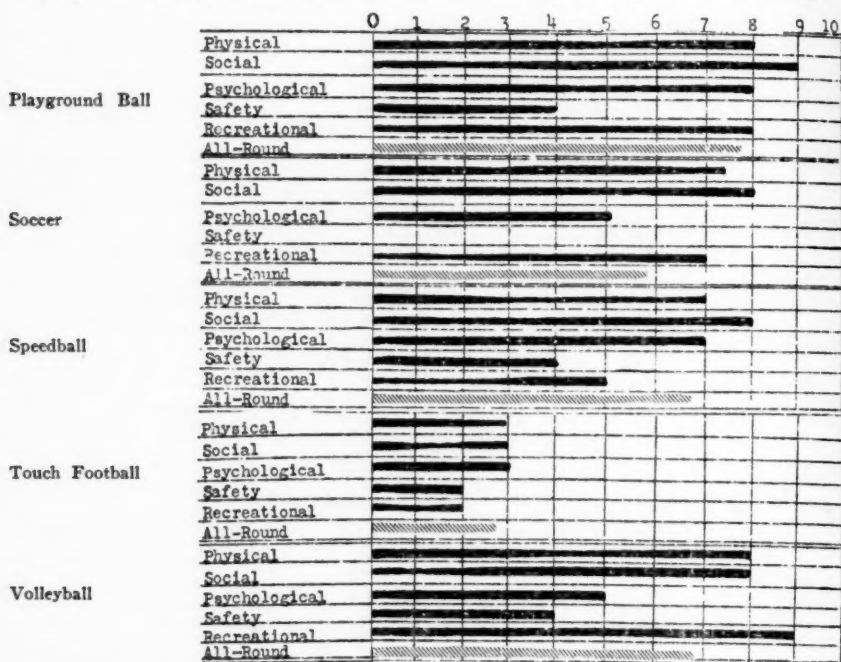


CHART NO. 10-A—5th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

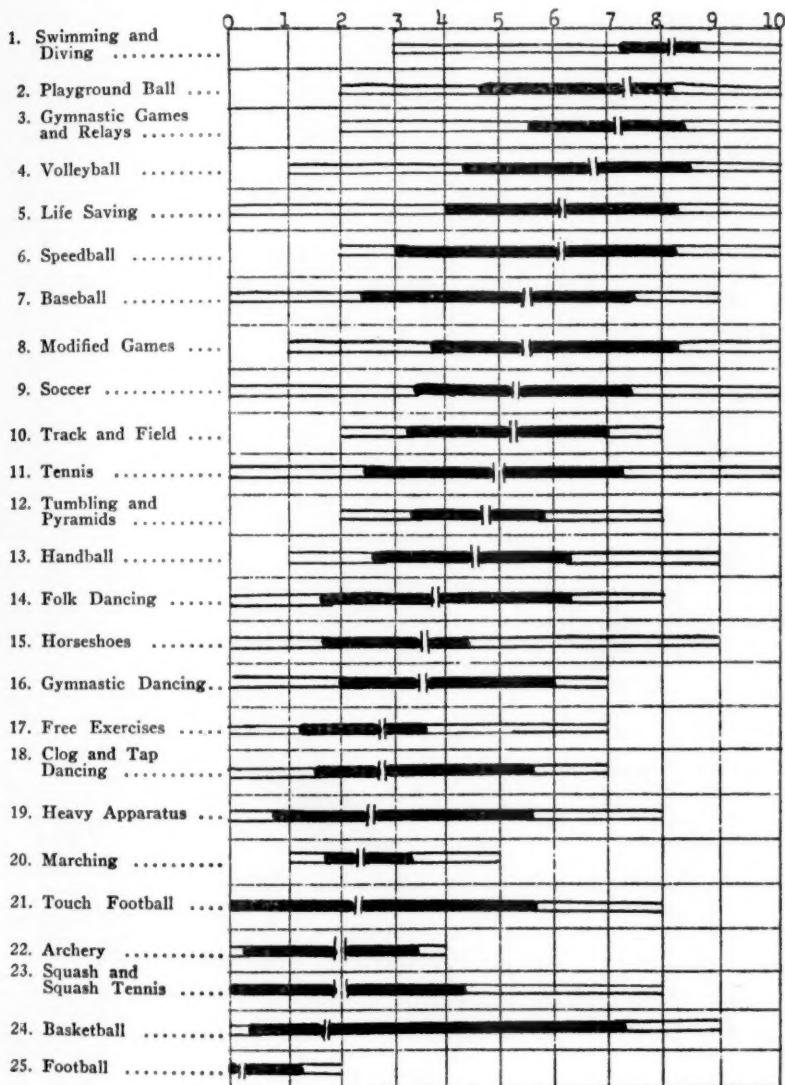


Boxing, fencing, wrestling, golf and water polo received no scores.

CHART NO. 16-A—6th Grade

Ranked Median Scores for All-Round Contribution

Chart shows median score; average middle 50% range; and total middle 50% range.
(10 represents maximum possible contribution)



Combined Scores for Grades 4, 5 and 6

As indicated in paragraph 8 of the description of the procedure, it was desired next to secure a composite picture of the value of each activity for the three grades in the school division. This was found by taking an average of the all-round contribution scores for each of the three grades. Chart No. 17-A presents a graphic picture of these average scores ranked in descending order of importance. It will be noted from this that only eight activities received scores that could be considered of significant value. Swimming and diving ranked first with a score of 7.7. Then followed in order, playground ball with a score of 6.8, gymnastic games with a score of 6.6, modified games with a score of 6.2, life saving with a score of 5.2, soccer with a score of 5.1, track and field with a score of 5.1, tumbling with a score of 4.5. All other activities rated less than 4, some with a mere trace and others not mentioned at all.

In Chart No. 18-A, the same list of average scores for the three grades is presented arranged under the original classified headings. From this, it is possible readily to compare the values of the various activities under a given heading.

CHART NO. 17-A—Grades 4-5-6

Ranked Averages of Median Scores for All-Round Contribution
(Based on scores of 39 raters)Curriculum Research—Boys' Physical Education Program—Intermediate School Division
(The scores are arranged in order of descending rank. The bars represent the averages
of the three median scores for grades 4-5-6)

(10 represents maximum possible contribution)

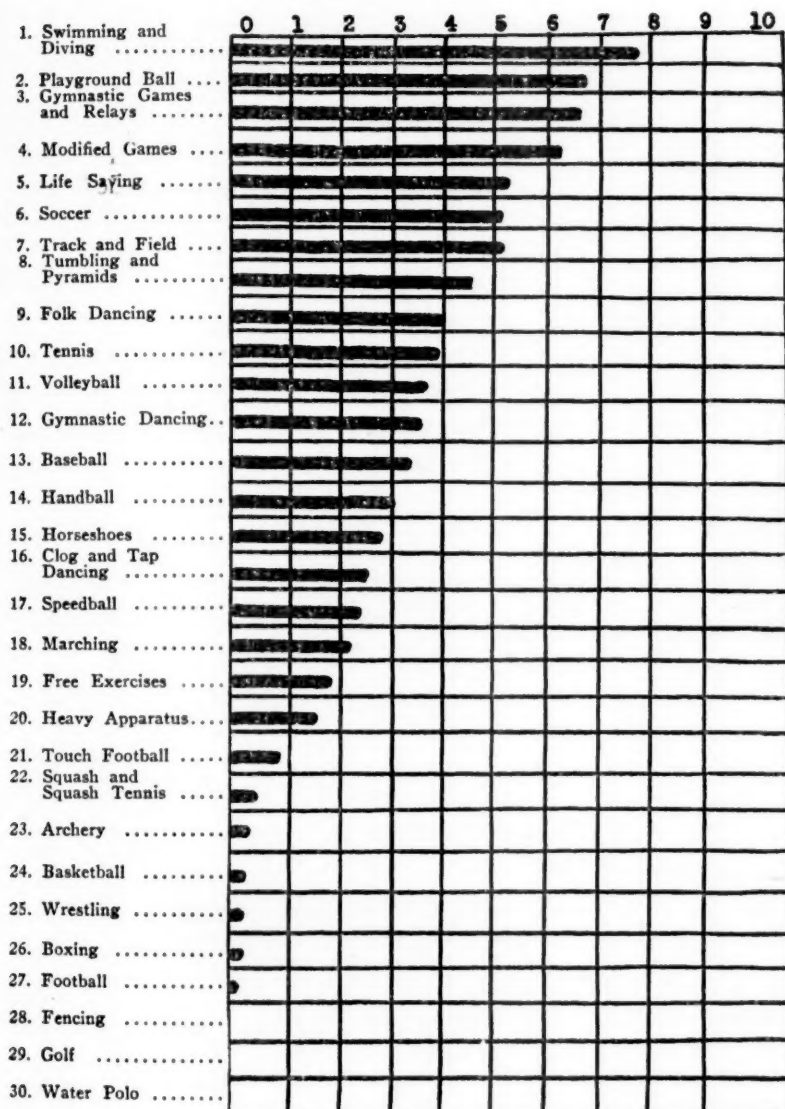
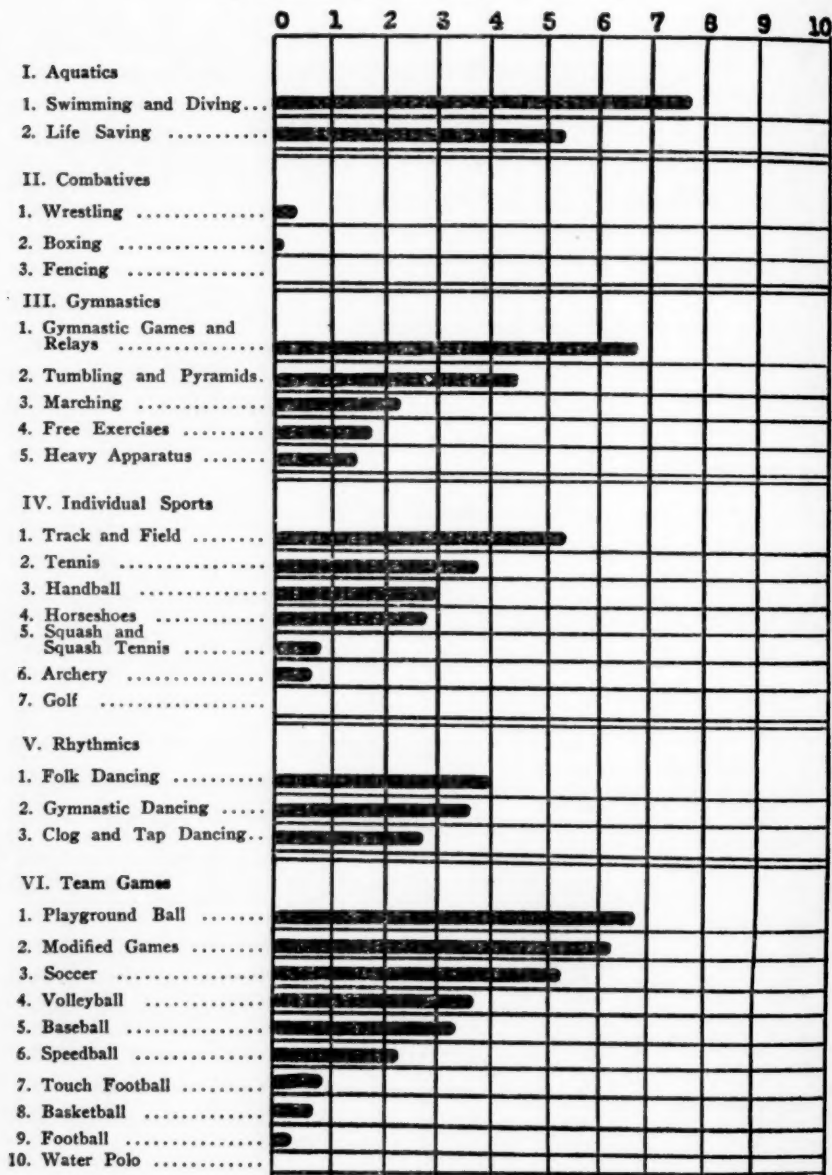


CHART 18-A—Grades 4, 5, 6

Classified Averages of Median Scores for All-Round Contributions

Based on 39 Raters

The scores are arranged in the original order of classification by activity divisions
(10 represents maximum possible contribution)



Part III. Junior High School—Grades 7, 8, 9

In the junior high school division, there is a distinct advance in the relative value of the various ratings, throughout the entire range of activities with a much larger percentage receiving a significant value rating of 5 or more.

7th Grade

In physical contribution, ten activities scored higher than 6 points. In order of importance they are, swimming and diving, wrestling, tumbling, soccer, volleyball, gymnastic games, handball, tennis, track and field and playground ball. In order of importance they are, swimming and diving, wrestling, tumbling, soccer, volleyball, gymnastic games, handball, tennis, track and field, and playground ball. In *social* contribution, seven activities each rated better than 6. In order, they were, life saving, gymnastic games, baseball, basketball, playground ball, soccer and volleyball. In *psychological* contribution, five activities received scores above 6: baseball, football, playground ball and tennis. In *safety* contribution, only four activities received scores above 6, namely, life saving, swimming, boxing and water polo. In *recreational* contribution, seven activities received the high scores above 6: swimming and diving, baseball, playground ball, tennis, basketball, volleyball and modified games.

In *all-round* contribution fifteen activities or 50 per cent of the entire list received a rating of better than 5. Ranked in order of relative importance, they are as follows: swimming and diving with a score of 8.4; playground ball, 7.3; baseball, 7; basketball, 6.5; volleyball, 6.4; track and field, 6.3; soccer, 6.2; touch football, 6.2; life saving, 6; tennis, 6; gymnastic games, 5.7; tumbling, 5.6; modified games, 5.5; wrestling, 5.4; speedball, 5.4.

8th Grade

In *physical* contribution, seventeen activities in the eighth grade received ratings of better than 6. In order, they are as follows: swimming, soccer, wrestling, gymnastic games, tumbling, handball, tennis, track and field, modified games, basketball, playground ball, speedball, touch football, volleyball, boxing, gymnastic dancing, and baseball. In *social* contribution, twelve activities scored better than 6, namely volleyball, baseball, basketball, playground ball, soccer, speedball, life saving, gymnastic games, tennis, track, modified games and touch football. In *psychological* contribution, nine activities scored above 6: basketball, football, soccer, swimming and diving, tennis, track, baseball, playground ball and speedball. In *safety* contribution, five activities received scores of better than 6: life saving, swimming and diving, boxing, football and wrestling. In *recreational* contribution, thirteen activities received the high scores: swimming and div-

ing, horseshoes, volleyball, golf, handball, modified games, baseball, playground ball, soccer, archery, basketball, speedball, and touch football.

In *all-round* contribution, nineteen activities received scores of better than 5. These activities stood out distinctly. All other activities rated less than 4. The activities in order of importance rated as follows: Swimming and diving, first, with a score of 8.3; followed in order by soccer, 8; tennis, 7.4; basketball, 7.4; volleyball, 7.4; speedball, 7.2; playground ball, 7.2; track and field, 6.8; modified games, 6.8; baseball, 6.8; touch football, 6.8; gymnastic games, 6.5; football, 6.3; life saving, 6; boxing, 5.8; wrestling, 5.6; handball, 5.6; tumbling, 5.3; gymnastic dancing, 5.2.

9th Grade

In *physical* contribution, the scores for the ninth grade were distinctly higher than in any preceding grade. Sixteen activities, over 50 per cent of the total, received ratings higher than 7, as follows: swimming, wrestling, tennis, basketball, football, water polo, boxing, gymnastic games, tumbling, handball, squash, track and field, playground ball, soccer, speedball and touch football. In *social* contribution, eight activities scored higher than 7; basketball, football, gymnastic games, modified games, playground ball, soccer, speedball and touch football. In *psychological* contribution, only three activities scored above 7: football, basketball and soccer. Ten others scored an even 7: life saving, gymnastic games, tennis, track, modified games, baseball, playground ball, speedball, touch football and volleyball. In *safety* contribution, only five activities scored above 7: life saving, swimming, tumbling, football, and water polo. Four others scored an even 7: boxing, wrestling, track and basketball. In *recreational* contribution, eight activities received ratings above 7: swimming and diving, tennis, golf, volleyball, handball, horseshoes, baseball and playground ball. Four others scored 7: squash, modified games, basketball and soccer.

In *all-round* contribution, an even 50 per cent of the total number received ratings higher than 6. The ratings in order are as follows: swimming and diving, first, with a score of 8.3; basketball, 8; football, 8; tennis, 7.6; soccer, 7.4; volleyball, 7.3; playground ball, 7.3; gymnastic games, 7; modified games, 7; speedball, 7; water polo, 7; baseball, 6.8; track and field, 6.6; touch football, 6.4; and wrestling, 6.2.

The *all-round* scores of the grades just described are graphically pictured in charts No. 16-B.

RELATIVE VALUES OF BOYS' ACTIVITIES

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CHART NO. 10-B—7th Grade

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

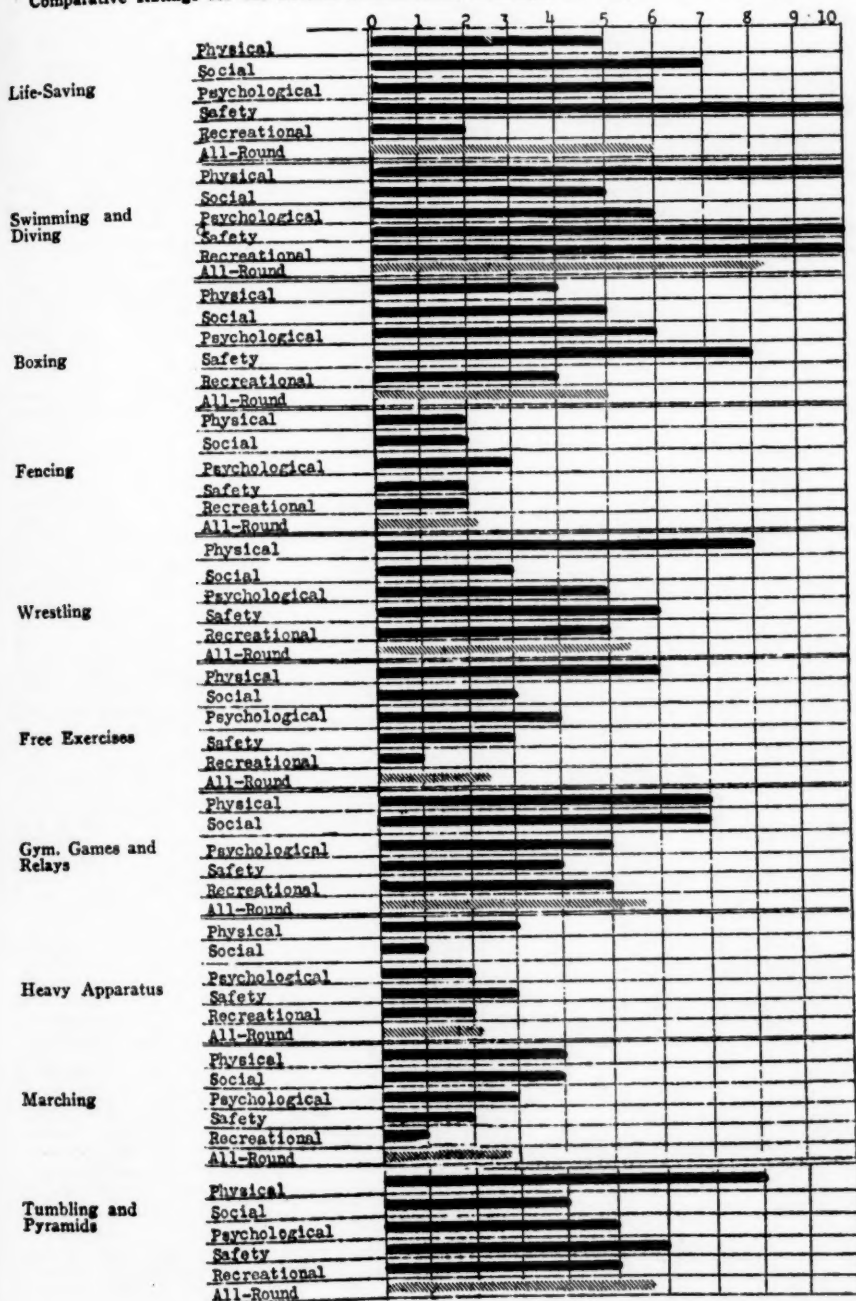
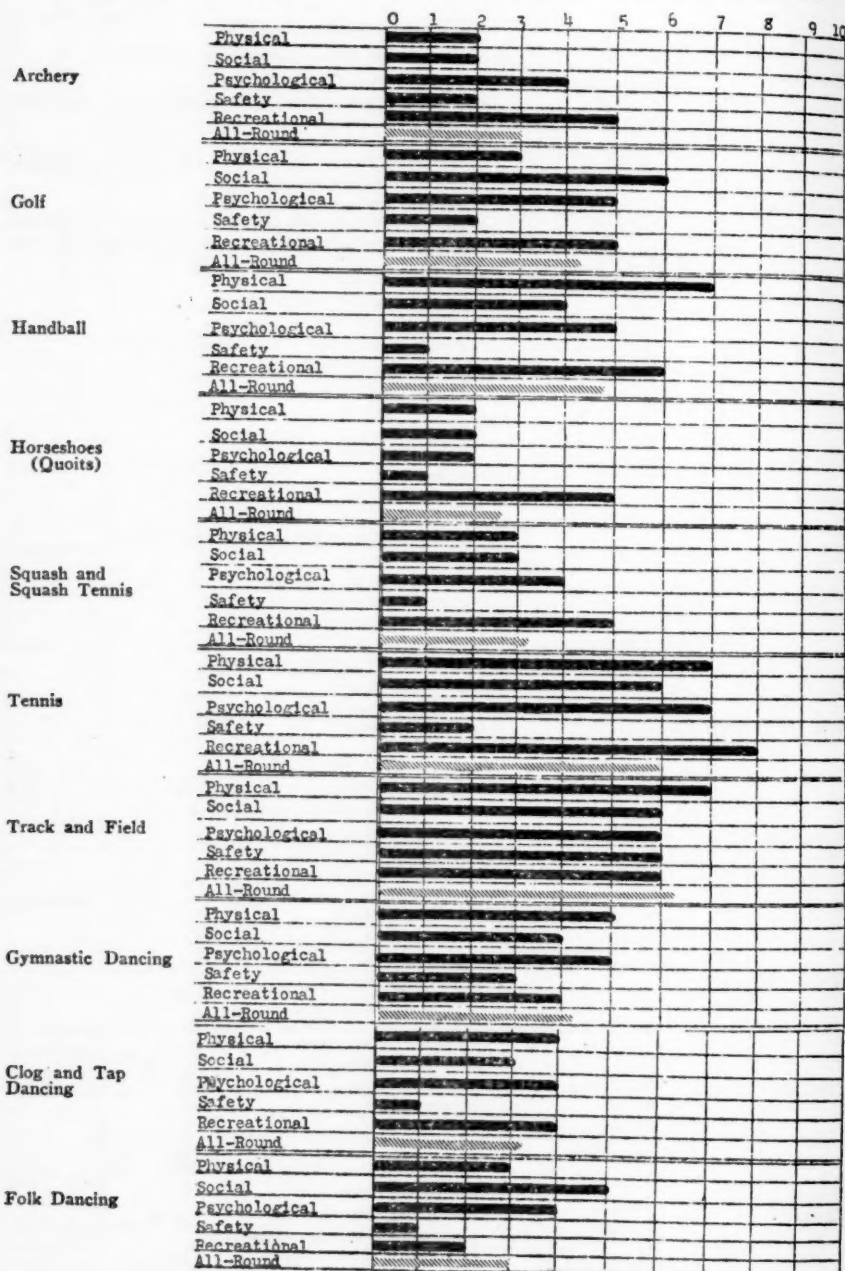


CHART NO. 10-B—7th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order



RELATIVE VALUES OF BOYS' ACTIVITIES

139

CHART NO. 10-B—7th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

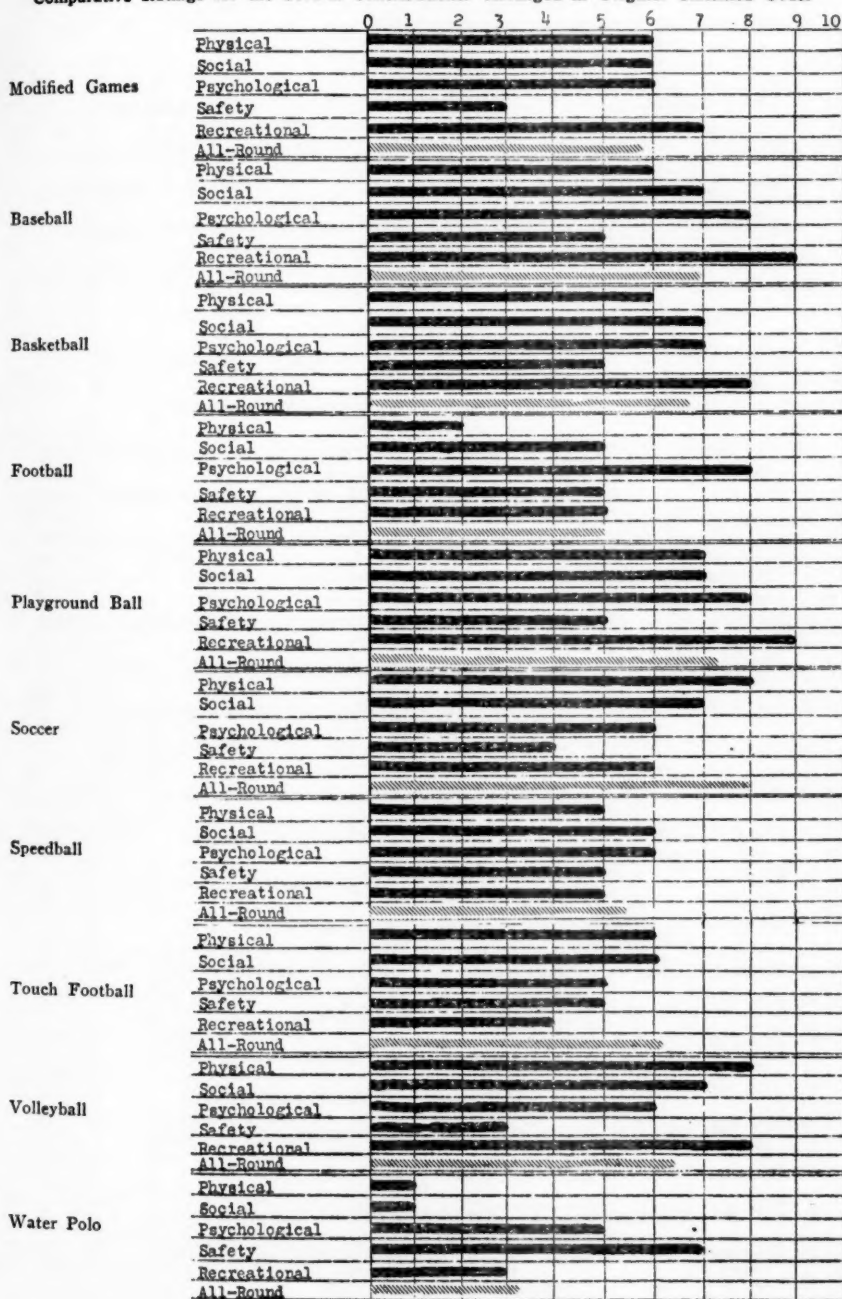
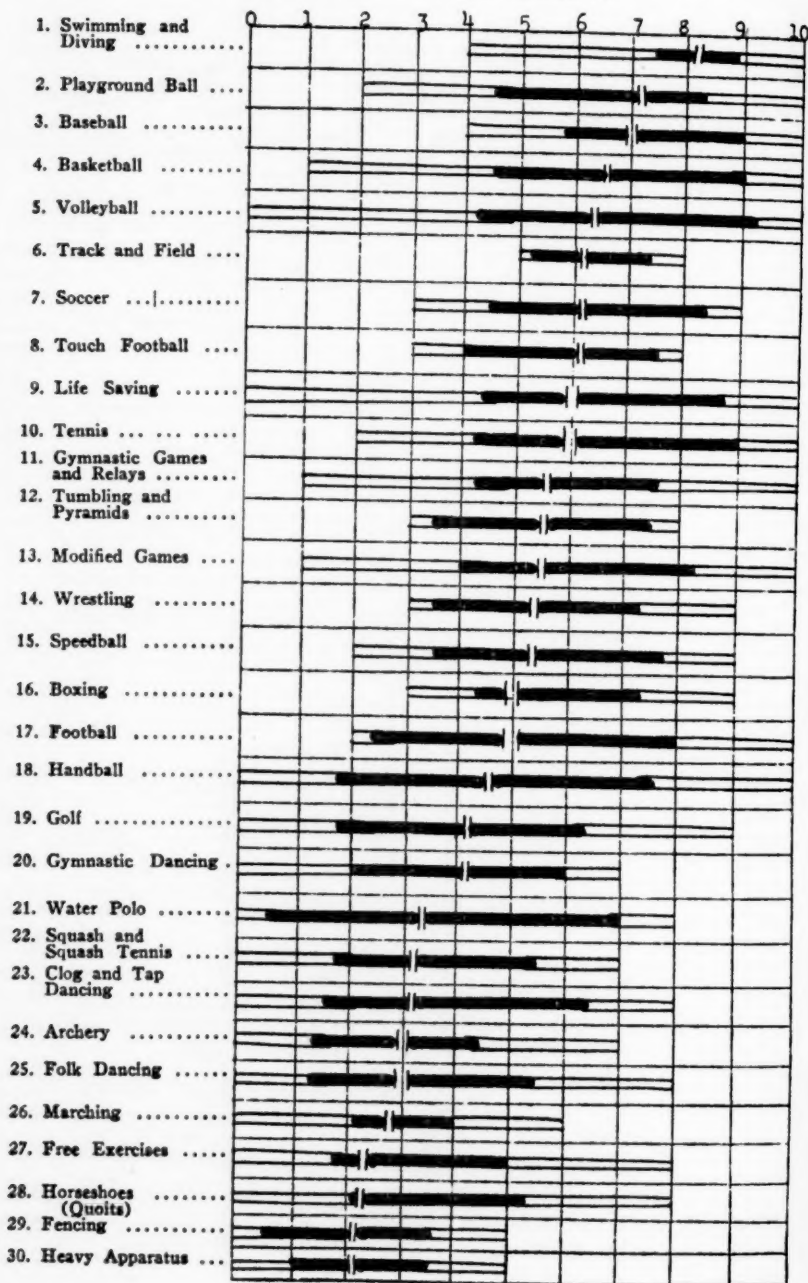


CHART NO. 16-B—7th Grade

Ranked Median Scores for All-Round Contribution
 Chart shows median score; average middle 50% range; and total middle 50% range.
 (10 represents maximum possible contribution)



RELATIVE VALUES OF BOYS' ACTIVITIES

141

CHART NO. 10-B—8th Grade

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

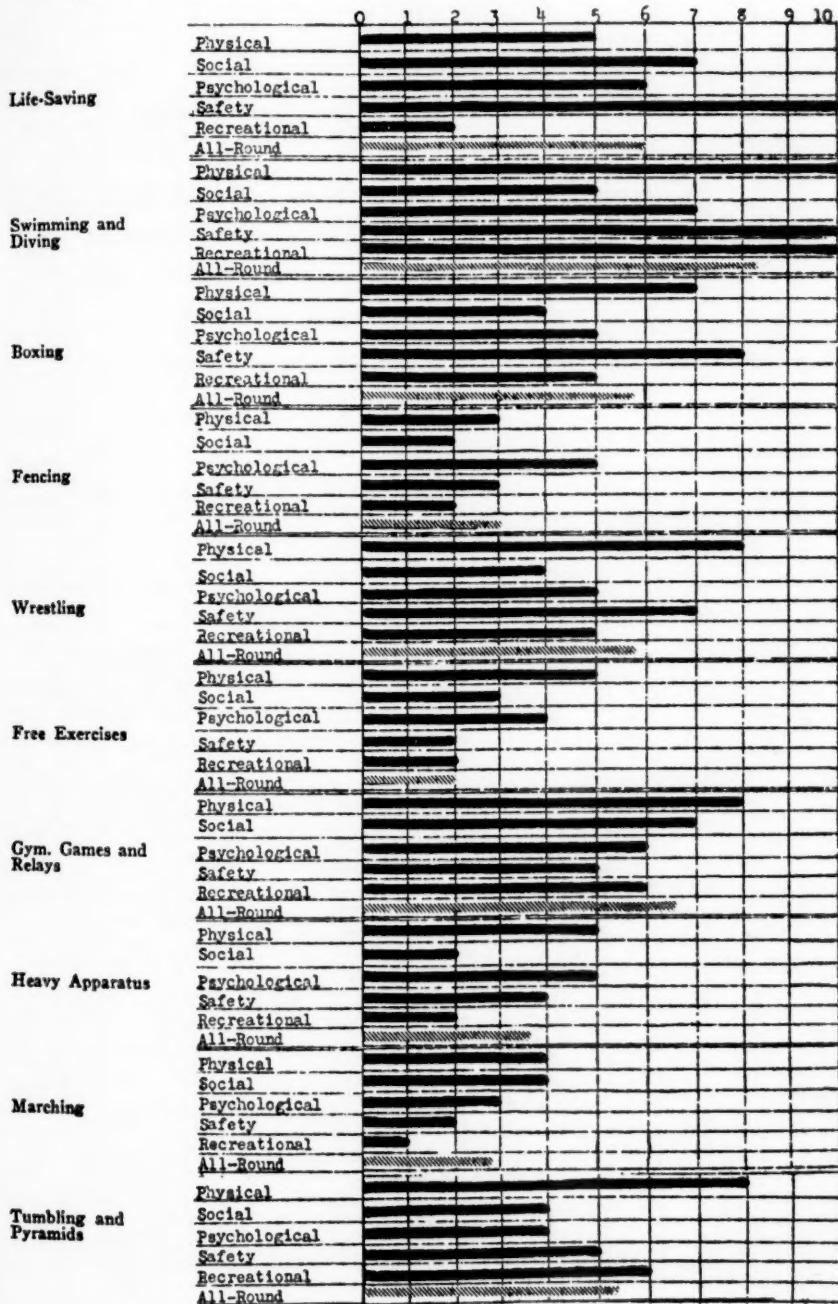
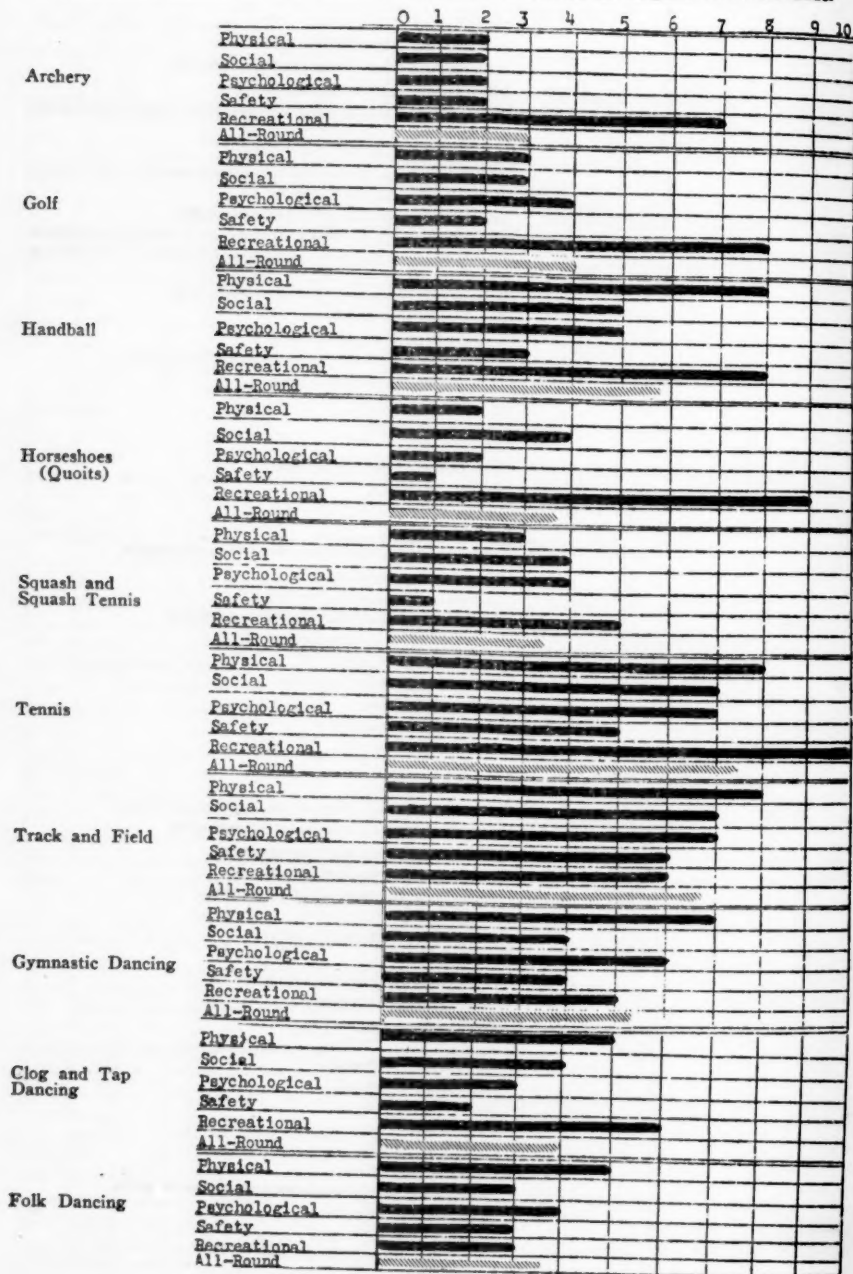


CHART NO. 10-B—8th Grade (Continued)

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order



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Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

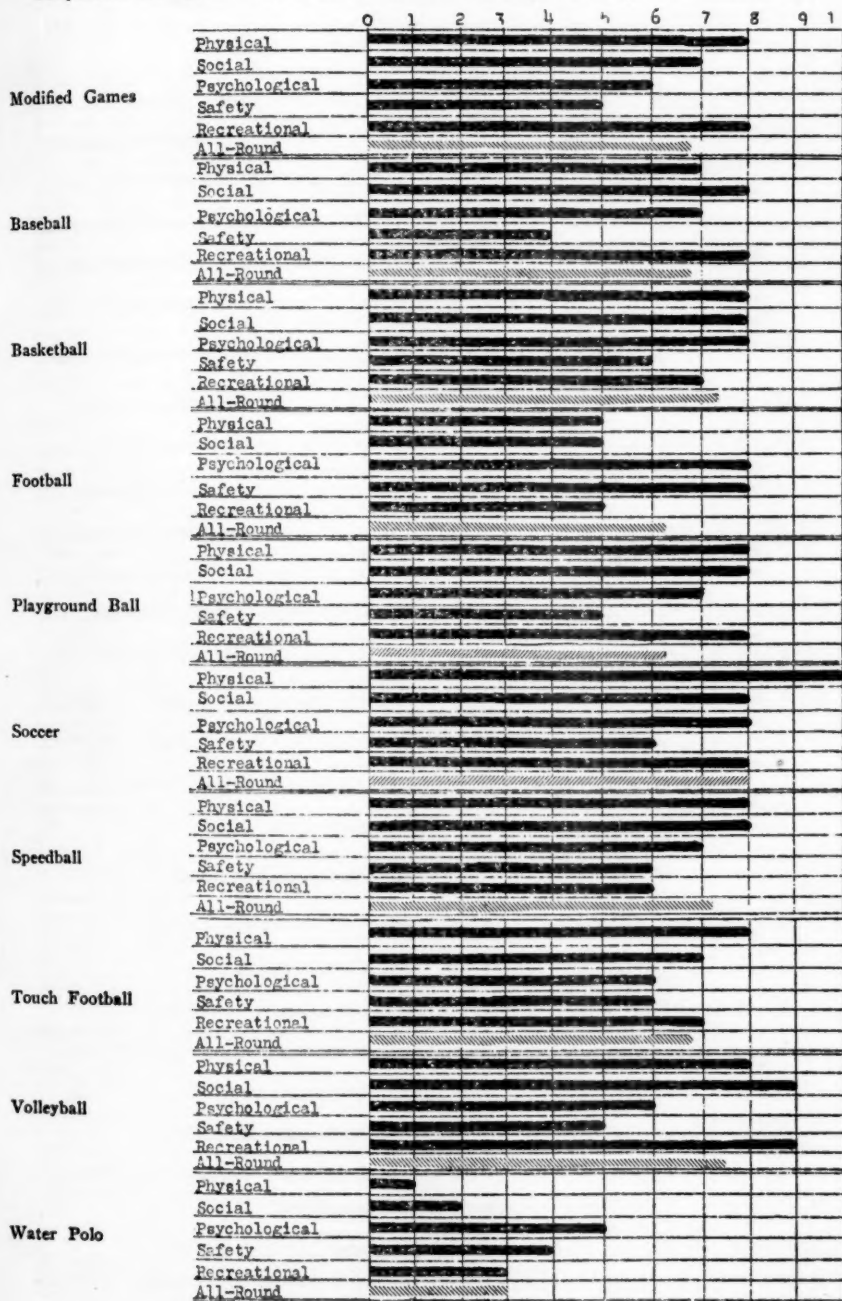


CHART NO. 16-B—8th Grade

Ranked Median Scores for All-Round Contribution

Chart shows median score; average middle 50% range; and total middle 50% range.
(10 represents maximum possible contribution)

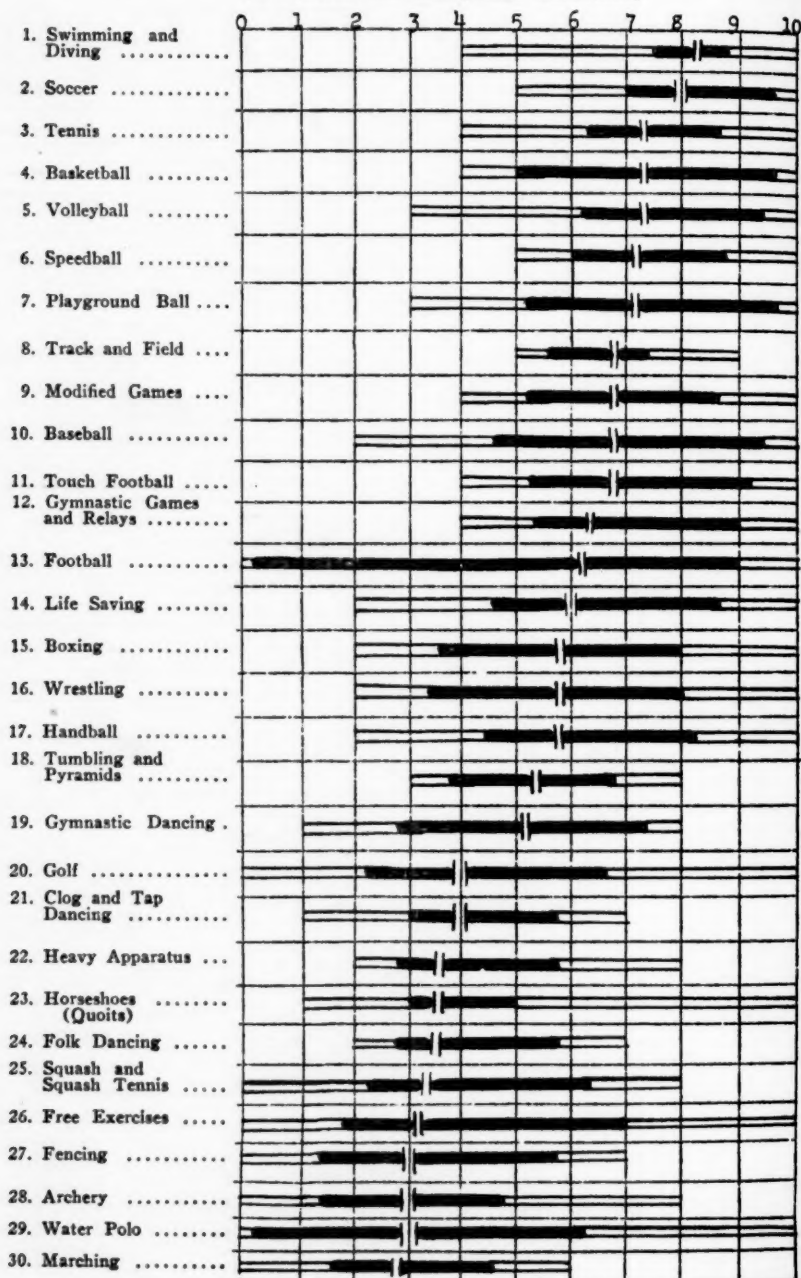


CHART NO. 10-B—9th Grade

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

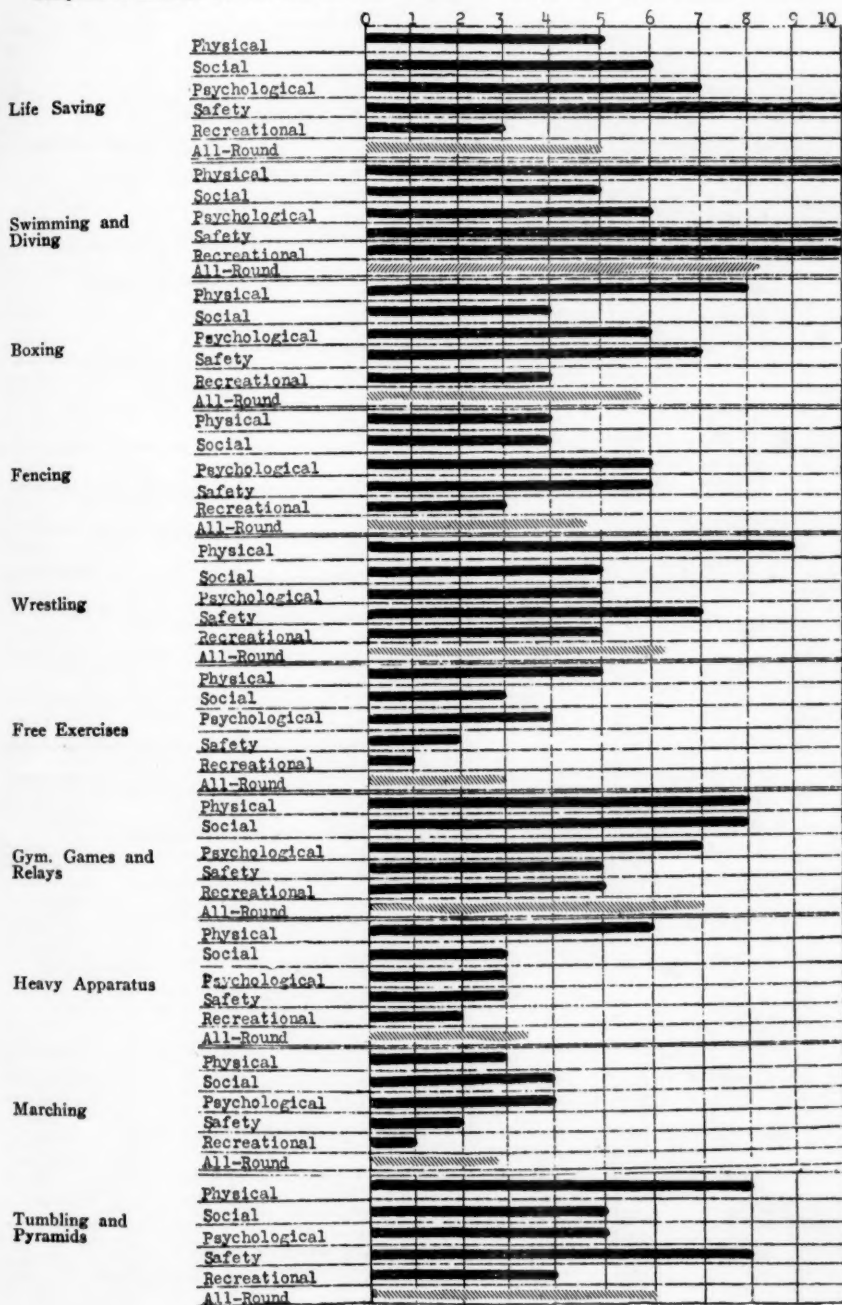


CHART NO. 10-B—9th Grade

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

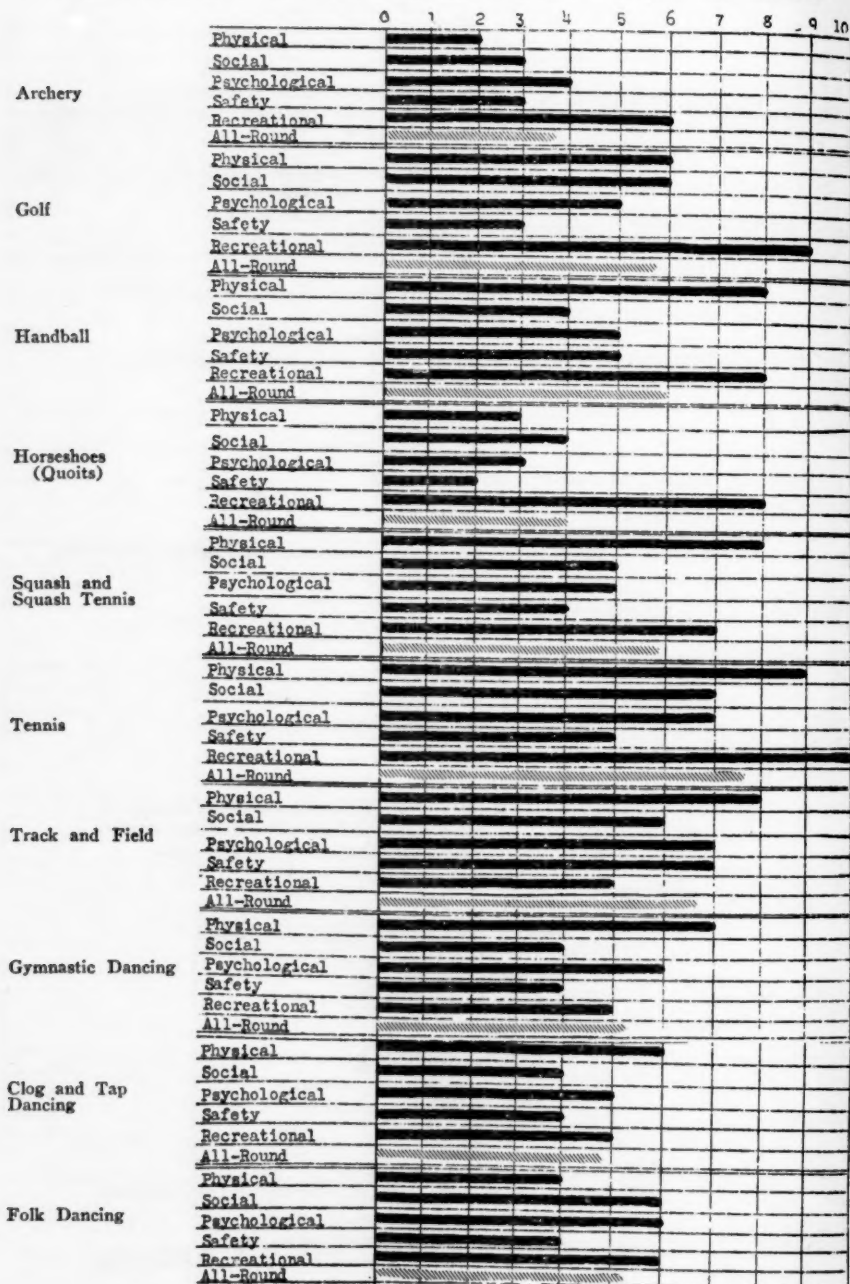


CHART 10-B—9th Grade
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

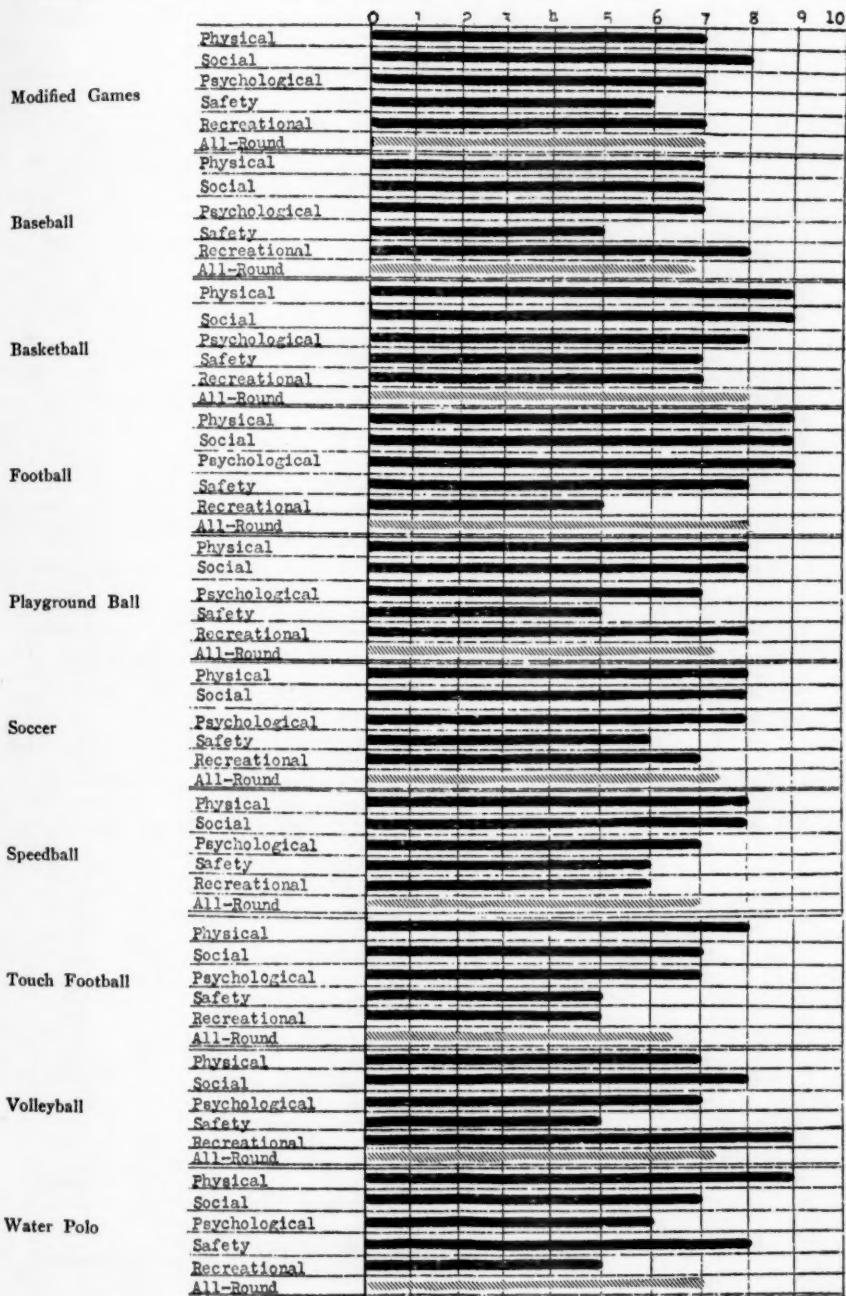
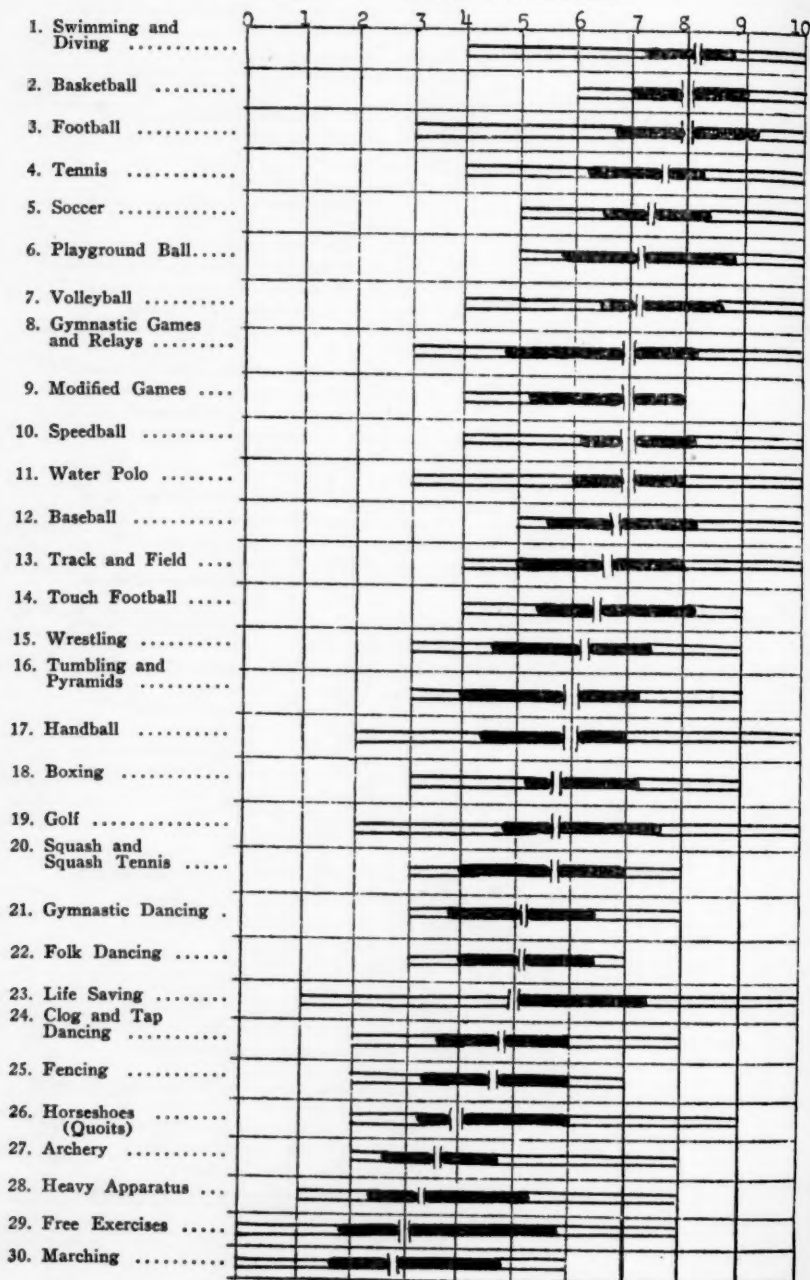


CHART NO. 16-B—9th Grade

Ranked Median Scores for All-Round Contribution

Chart shows median score; average middle 50% range; and total middle 50% range.
(10 represents maximum possible contribution)



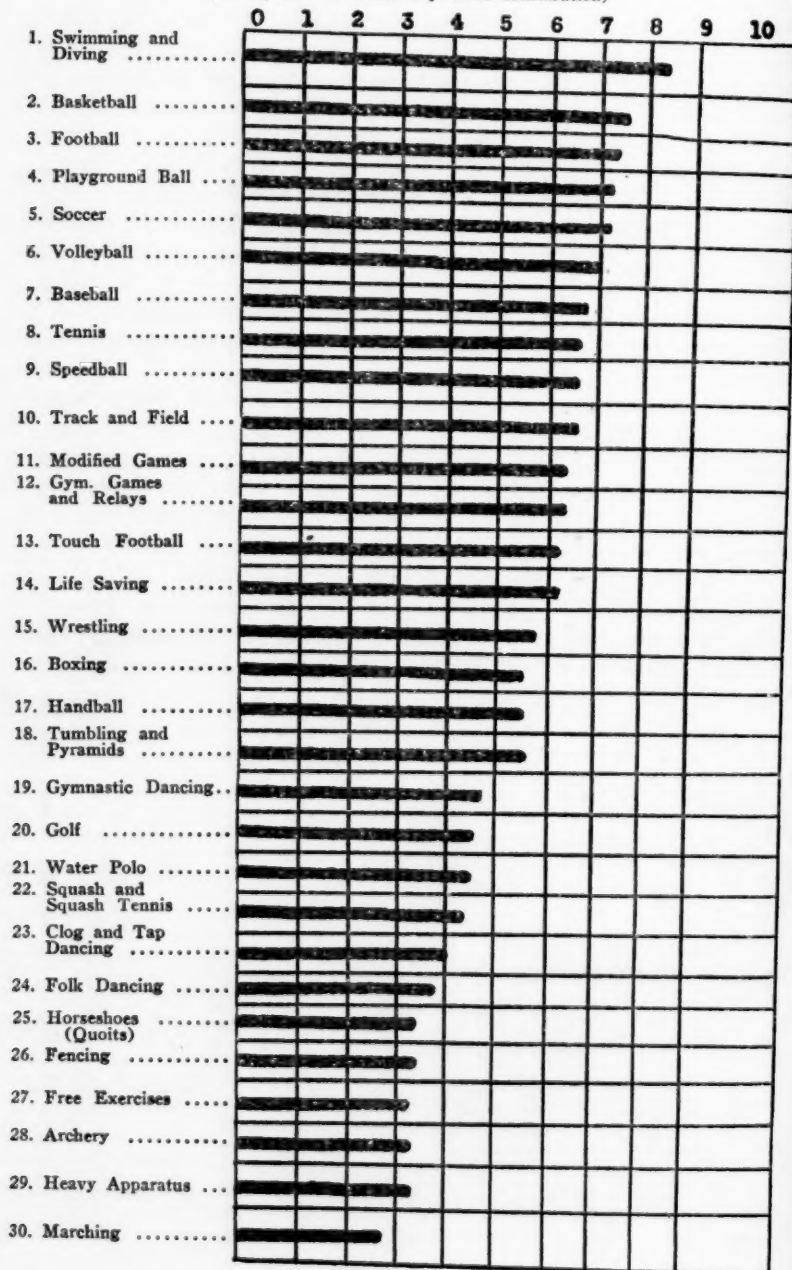
Combined Scores for Grades 7, 8, 9

As in the preceding school divisions, averages were taken of the all-round contribution scores for each of the three grades, in order to give a composite picture of the relative values for the entire school division. In chart 17-B these average scores are ranked in descending order of importance. A very significant increase is noticeable in the all-round value of activities for the junior high school grades. In fact almost 50 per cent of the activities received ratings above 6.

The ranking of the first fourteen activities in order of importance is as follows: swimming and diving, 8.3; basketball, 7.4; football, playground ball and soccer, each a score of 7.2; volleyball, 7; baseball, 6.7; tennis, 6.5; speedball, 6.4; track and field, 6.3; modified games and gymnastic games, each 6.2; touch football and life saving, each 6.1. Four other activities received ratings above 5 in the following order: wrestling, 5.8; boxing, handball and tumbling, each 5.3. The remainder of the activities ranged gradually downward to a minimum score of 2.2 which was given to marching.

Chart 18-B again presents the same list of average scores for the three grades arranged according to the original classified headings. From this it is noted that the activity receiving the highest rating in *aquatics* is swimming and diving with a score of 8.3; in *combatives*, wrestling with a score of 5.7; in *gymnastics*, gymnastic games and relays with a score of 6.2; in *individual sports*, tennis, with a score of 6.7; in *rhythmics*, gymnastic dancing, with a score of 4.7; and in *team games*, basketball with a score of 7.4. The team game group is easily outstanding in the all-round contribution for the entire division with the exception that swimming as an individual activity is far in the lead.

CHART NO. 17-B—Grades 7-8-9
 Ranked Averages of Median Scores for All-Round Contribution
 (Based on scores of 43 Raters)
 Curriculum Research—Boys' Physical Education Program—Junior High School Division
 (The scores are arranged in order of descending rank. The bars represent the averages
 of the three median scores for grades 7-8-9)
 (10 represents maximum possible contribution)



Classified Averages of Median Scores for All-Round Contributions
Based on 43 Raters

[illegible]

Part IV. Senior High School—Grades 10, 11, 12

In the senior high school division again, we note a marked increase in the number of activities given high ratings. Twenty-three different activities were given a score of 5 or better as compared with eighteen in the junior high school, seven in the intermediate division and two in the elementary. By grades, the same relative high scoring is evident.

10th Grade

In *physical* contribution, five activities scored 9 or 10: swimming and diving, wrestling, tennis, track and speedball. Ten others received scores of 8 points each: boxing, gymnastic games, tumbling, handball, basketball, football, playground ball, soccer, volleyball and water polo. In *social* contribution, six activities scored higher than 7: speedball, gymnastic games, basketball, football, playground ball and soccer. In *psychological* contribution, only four activities received ratings above 7: football, life saving, basketball and soccer. In *safety* contribution, two activities received high scores: life saving and swimming, each receiving 10. Four others received scores of 7: boxing, wrestling, tumbling and football. In *recreational* contribution, nine activities received scores higher than 7: swimming, golf, tennis, archery, handball, horseshoes, squash, playground ball and volleyball.

In *all-round* contribution, seventeen activities, (a little better than 50 per cent) were given ratings above 6: swimming and diving, first, with a score of 8.4; followed in order by soccer, 7.4; tennis, basketball, football and water polo, each 7.2; gymnastic games, playground ball and volleyball, each 7; speedball, 6.8; life saving, boxing and golf, each 6.4; wrestling, modified games, touch football and baseball, each 6.2.

11th Grade

In *physical* contribution, ten activities are outstanding with ratings of 9 or better: swimming and diving, tennis, basketball, football, speedball, boxing, wrestling, playground ball, soccer and water polo. In *social* contribution, the ratings were relatively much lower, only four activities receiving scores above 7: basketball, football, playground ball and soccer. Eight others received scores of 7: life saving, gymnastic games, golf, baseball, speedball, touch football, volleyball and water polo. In *psychological* contribution, basketball and football rated above 7, while thirteen others received an even score of 7. In *safety* contribution three activities, life saving, swimming and diving, and boxing, received ratings above 7, while six others were rated 7. In *recreational* contribution, nine activities rated higher than 7: swimming and diving, golf, tennis, handball, horseshoes, squash, clog and tap dancing, modified games and volleyball. Five others rated 7.

In *all round* contribution, nine activities received ratings of 7 or higher. In order they are as follows: swimming and diving, first with a score of 8.6; followed in order by basketball, 8.2; football, 7.8; tennis, 7.6; playground ball, soccer and speedball, each 7.4; life saving and volleyball, each 7. Eleven other activities scored between 6 and 7: boxing, golf, track, baseball, gymnastic games, modified games, water polo, clog dancing, touch football, wrestling and handball.

12th Grade

In *physical* contribution, eight activities were rated above 8: swimming and diving, boxing, wrestling, basketball, football, soccer, speedball and handball. Nine other activities received scores of 8. In *social* contribution, four activities received scores of 8 or better: football, basketball, playground ball and soccer. Six others scored 7. In *psychological* contribution, four activities scored 8 or better: football, life saving, basketball and soccer. Seven others received scores of 7. In *safety* contribution, two activities only were rated above 7: life saving and swimming. Scores of 7 were given to boxing, wrestling and tumbling. All others rated below 6. In *recreational* contribution, seven activities received scores of 8 or better: swimming and diving, tennis, golf, handball, horseshoes, playground ball and volleyball. Four others received scores of 7.

In *all-round* contribution, seven activities received scores of 7 or better. In order they were: swimming and diving, 8.4; football, 8; soccer, 7.6; basketball, 7.4; playground ball, 7.1; life saving and tennis, each 7. Nine others rated between 6 and 7: baseball, speedball, volleyball, boxing, wrestling, track, touch football, water polo and handball. The all-round scores for the three grades are graphically pictured in Charts 16-C.

CHART 10-C—10th Grade
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

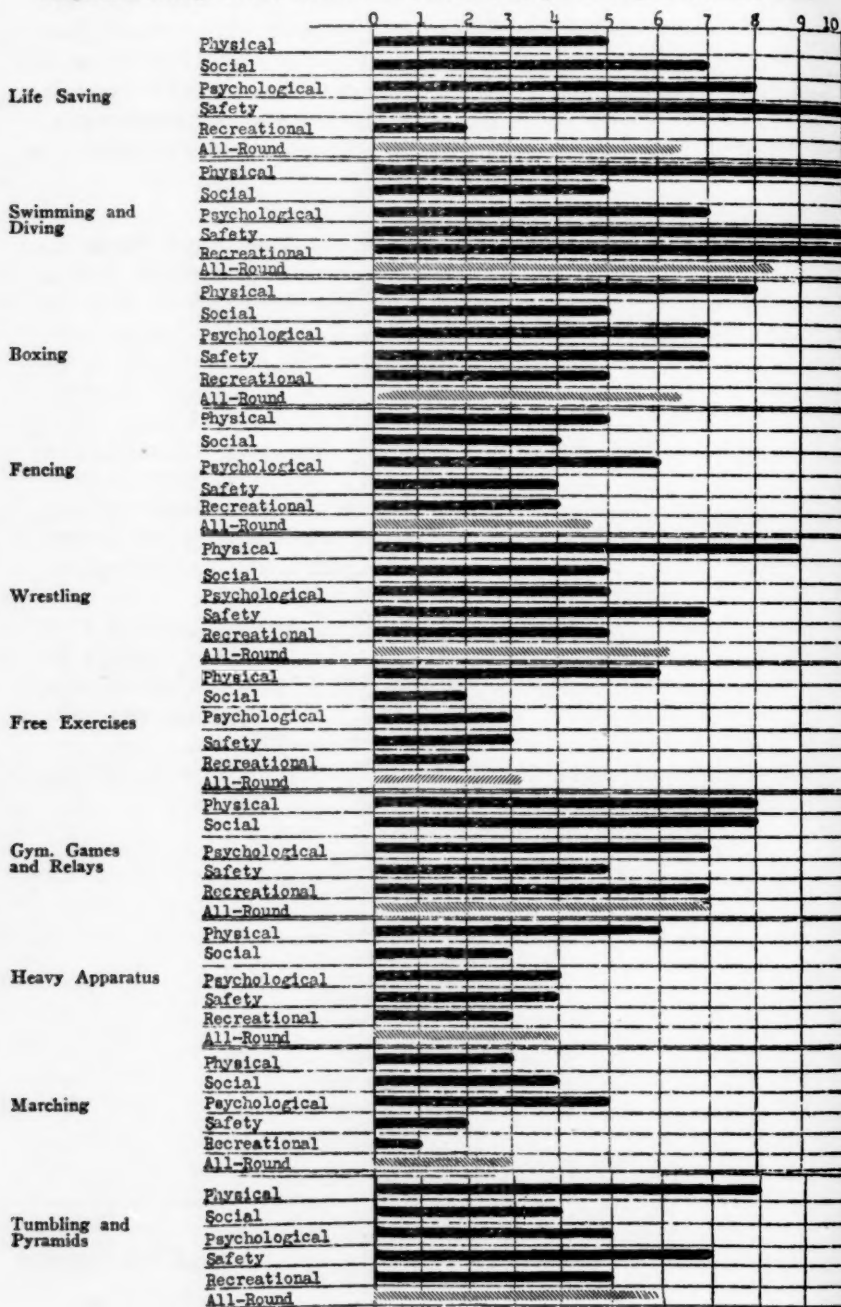


CHART 10-C—10th Grade (Continued)

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

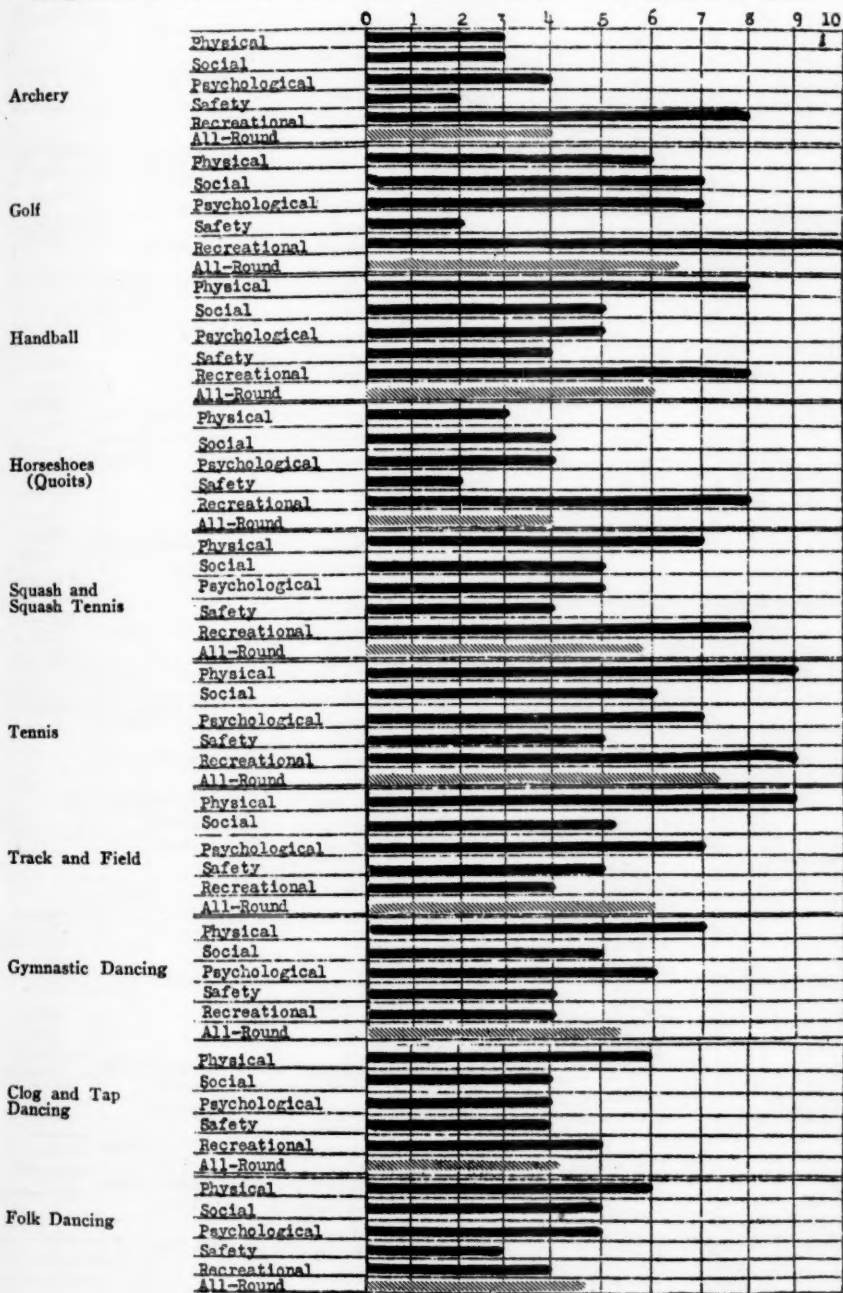


CHART 10-C—10th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

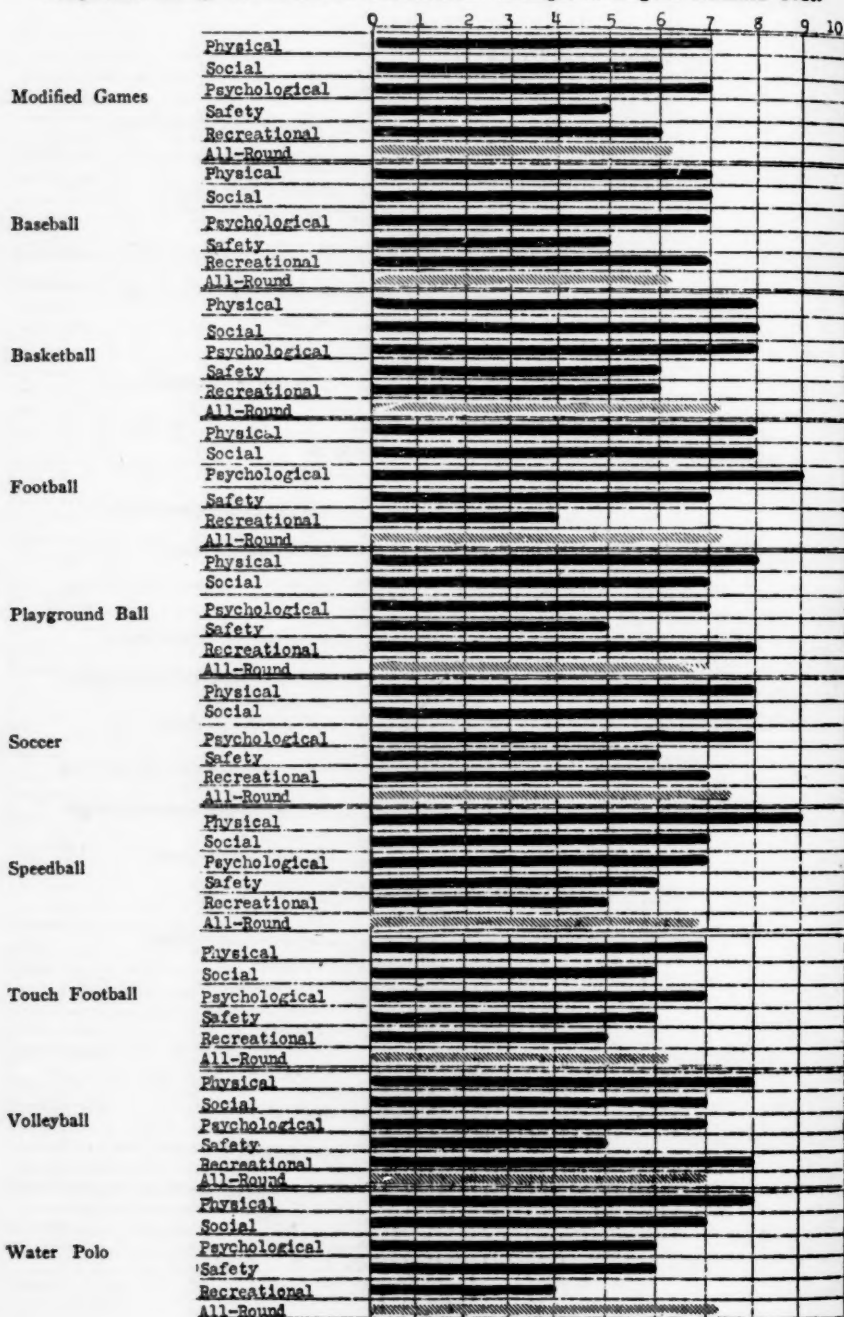


CHART NO. 16-C—10th Grade

Ranked Median Scores for All-Round Contribution

Chart shows median score; average middle 50% range; and total middle 50% range.
(10 represents maximum possible contribution)

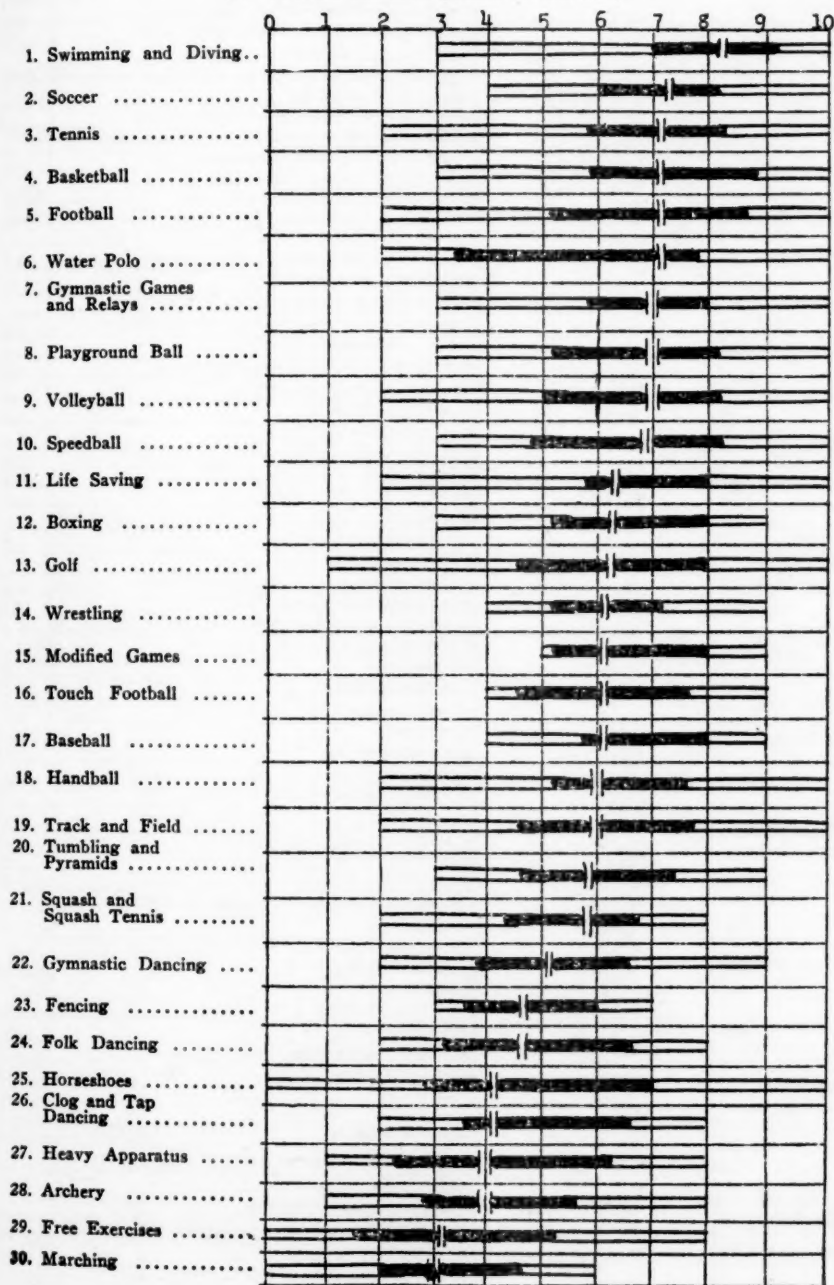
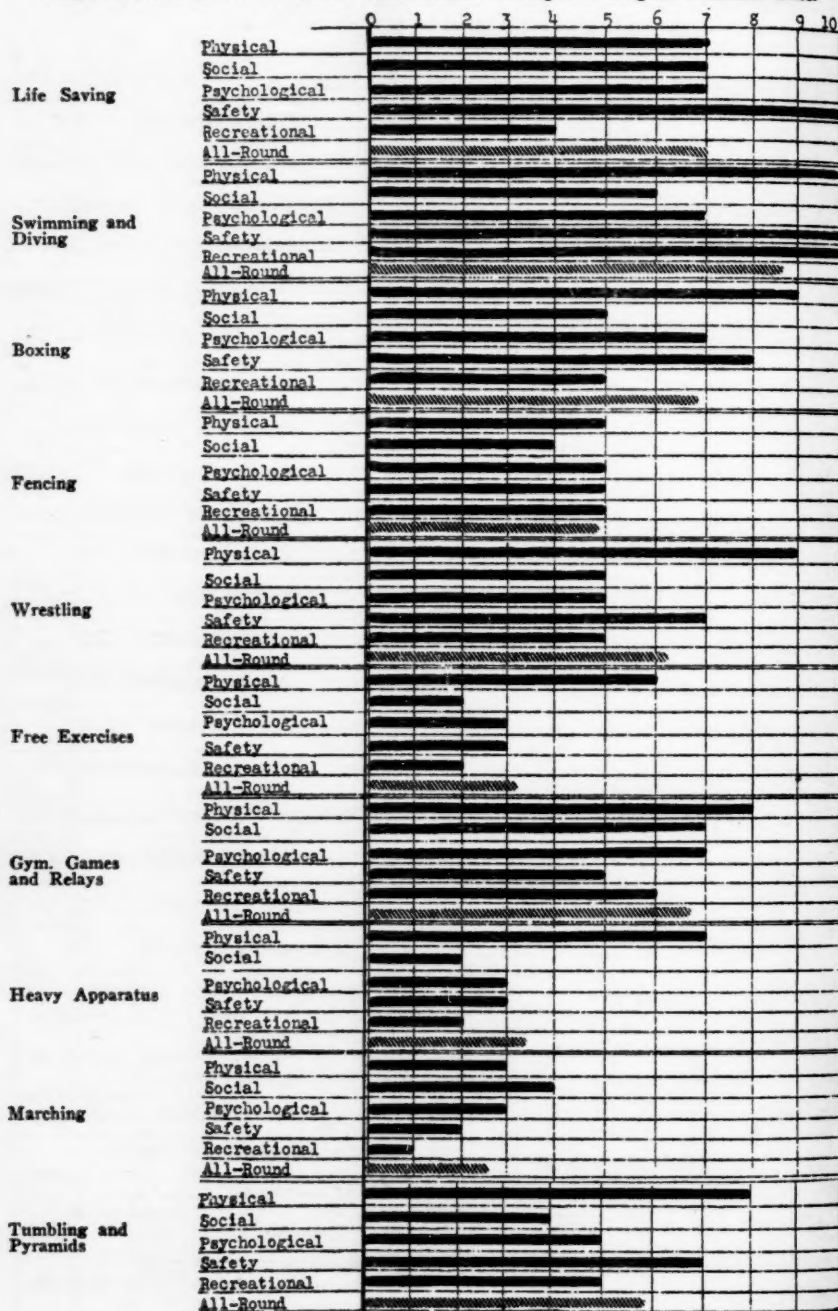


CHART 10-C—11th Grade
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order



RELATIVE VALUES OF BOYS' ACTIVITIES

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CHART 10-C—11th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

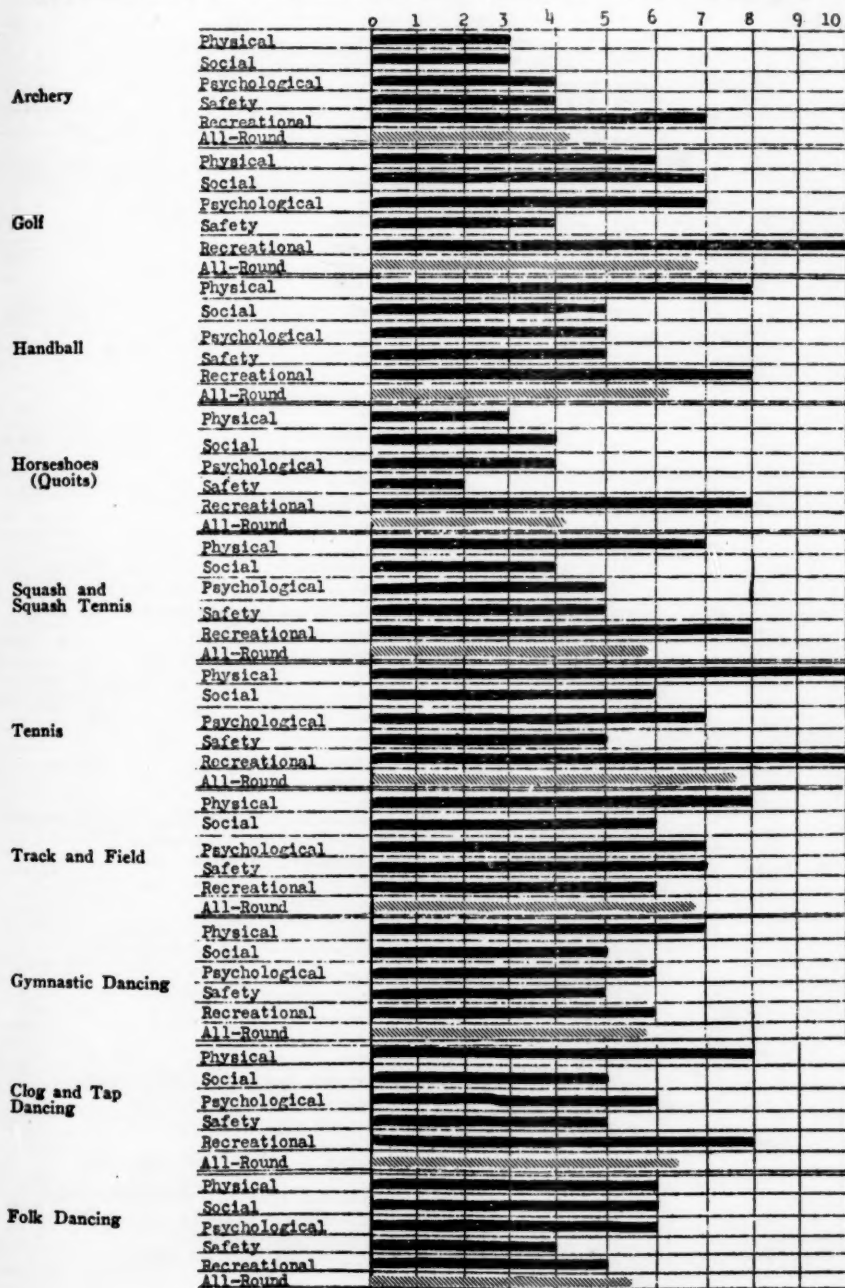


CHART 10-C—11th Grade (Continued)

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

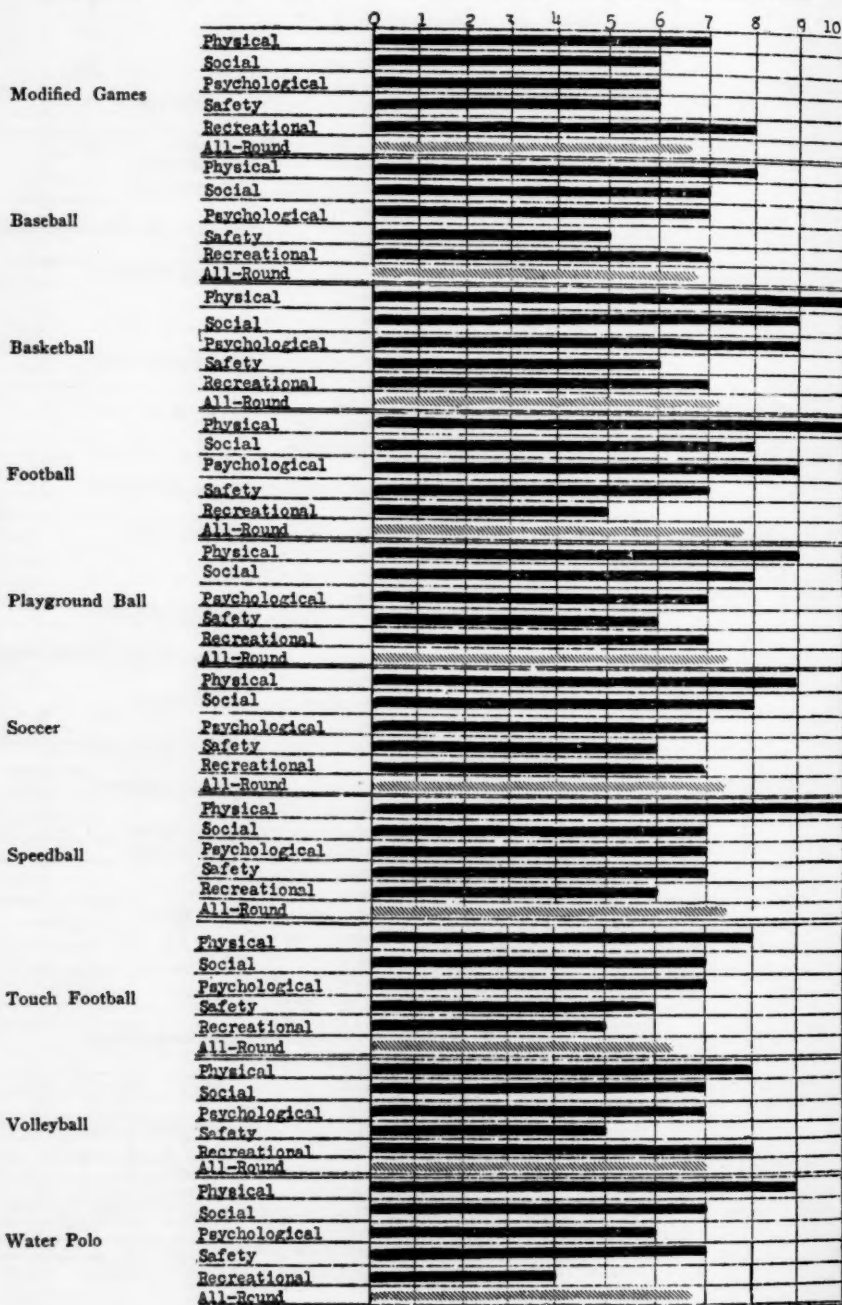


CHART 16-C—11th Grade

Ranked Median Scores for All-Round Contribution

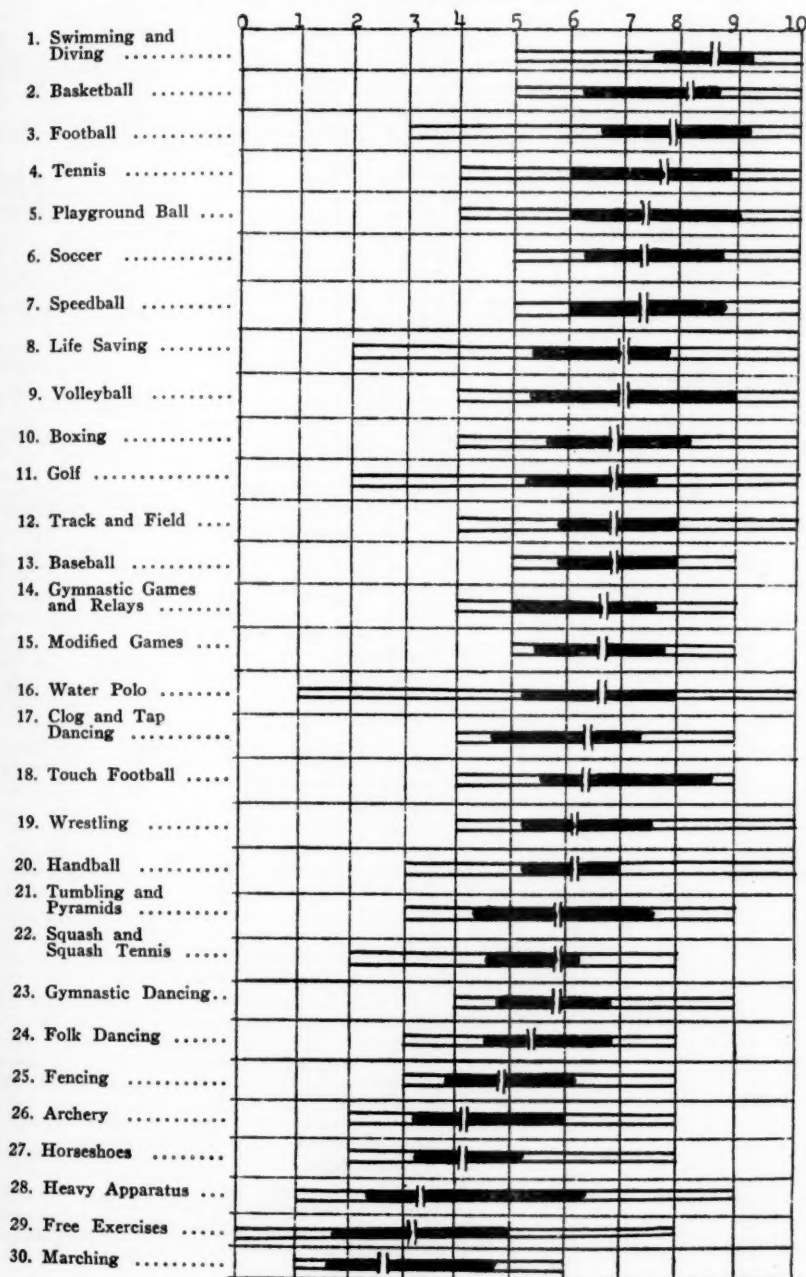
Chart shows median score; average middle 50% range; and total middle 50% range
(10 represents maximum possible contribution)

CHART 10-C—12th Grade
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

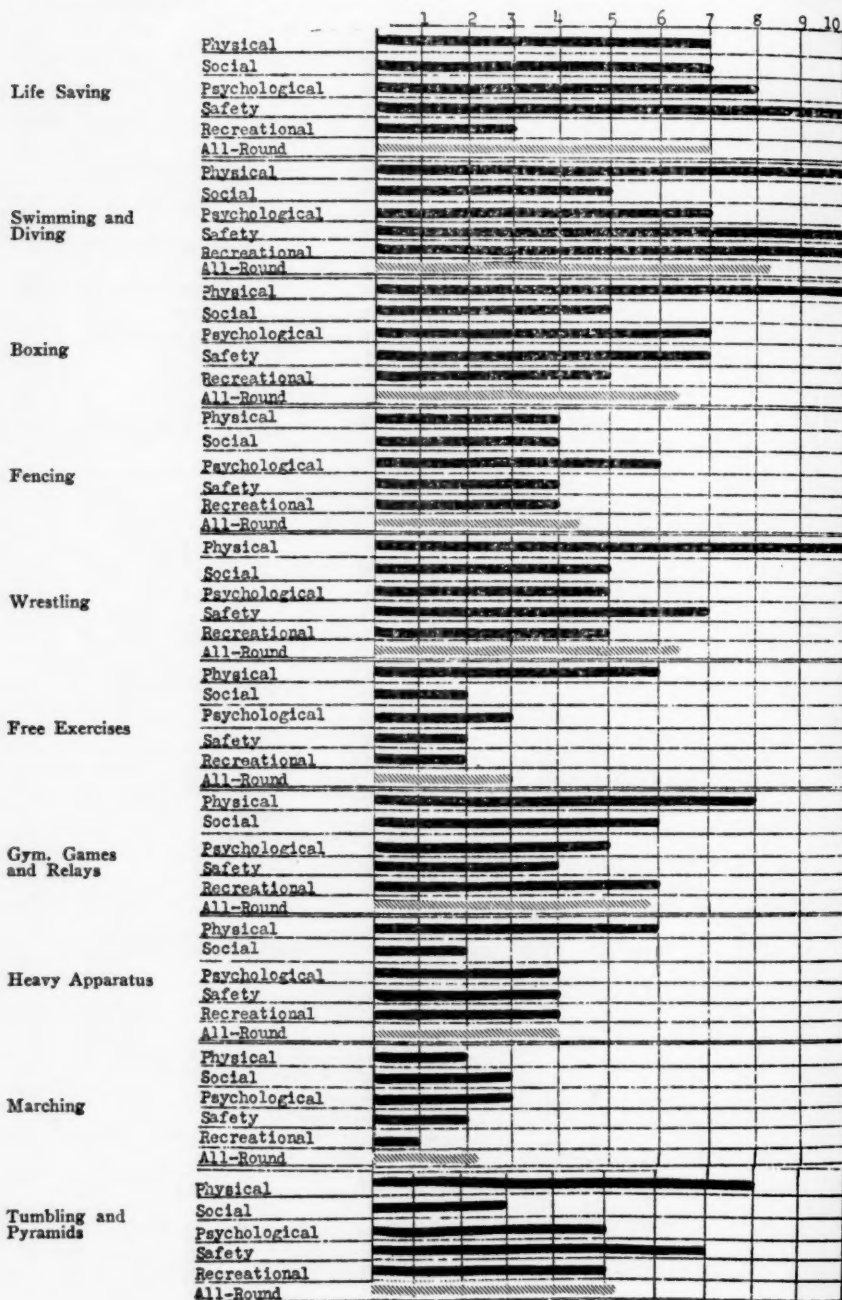


CHART 10-C—12th Grade (Continued)
Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

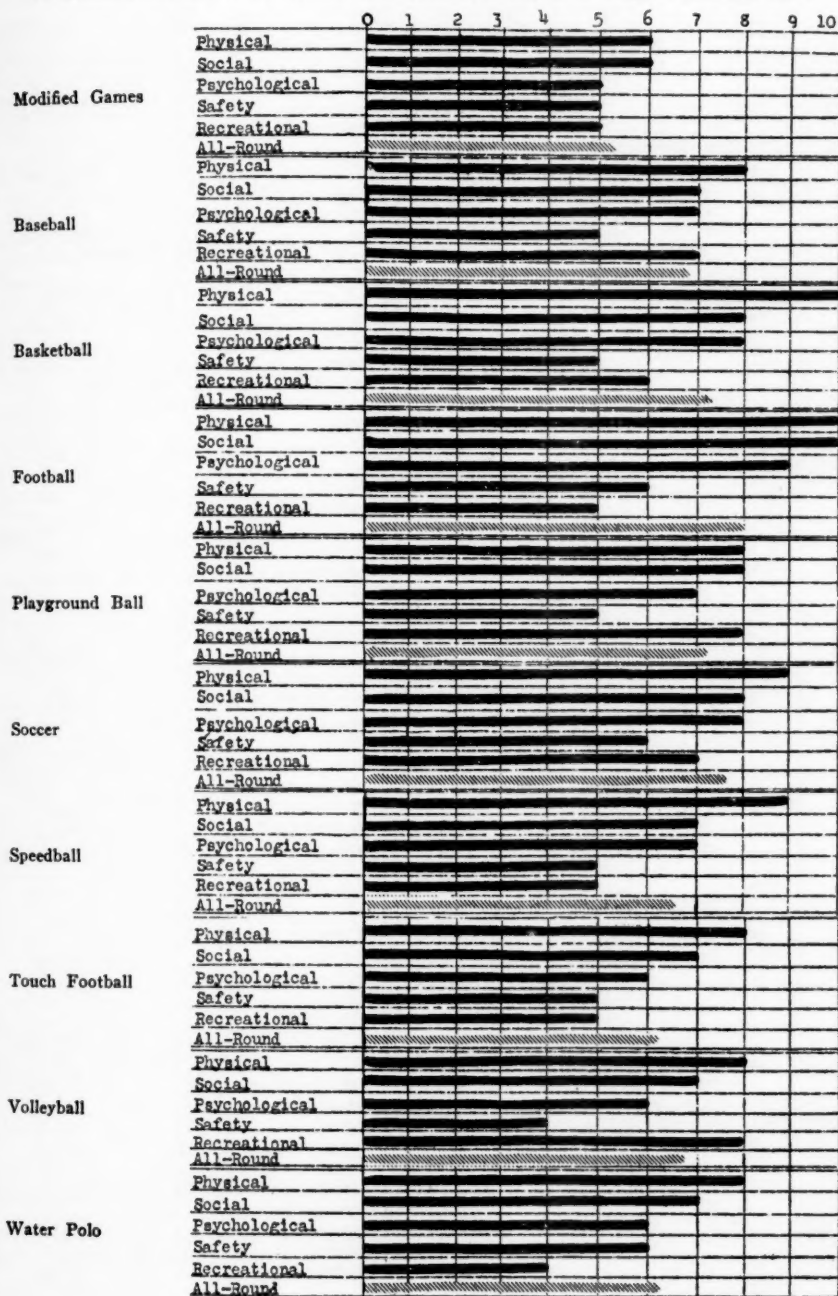


CHART 10-C—12th Grade (Continued)

Comparative Ratings for the Several Contributions. Arranged in Original Classified Order

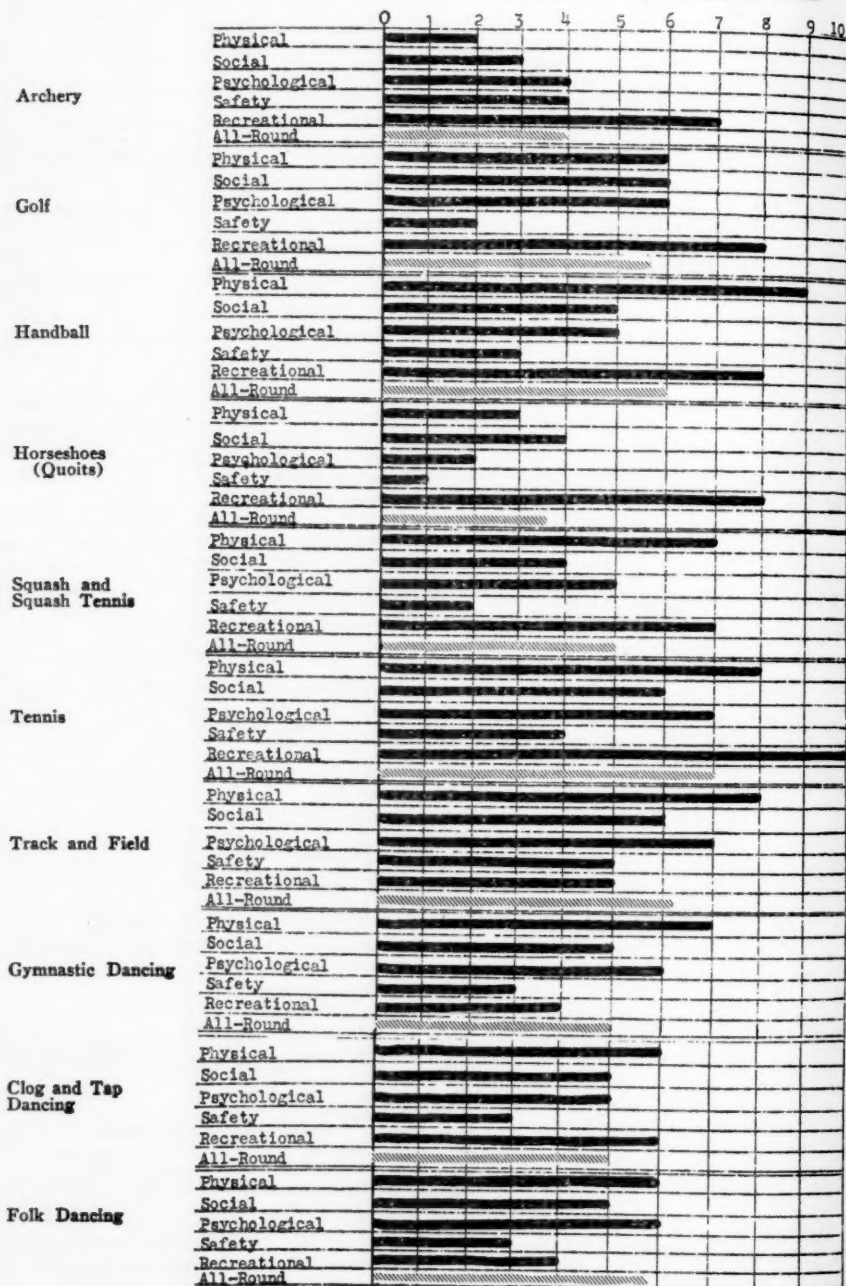
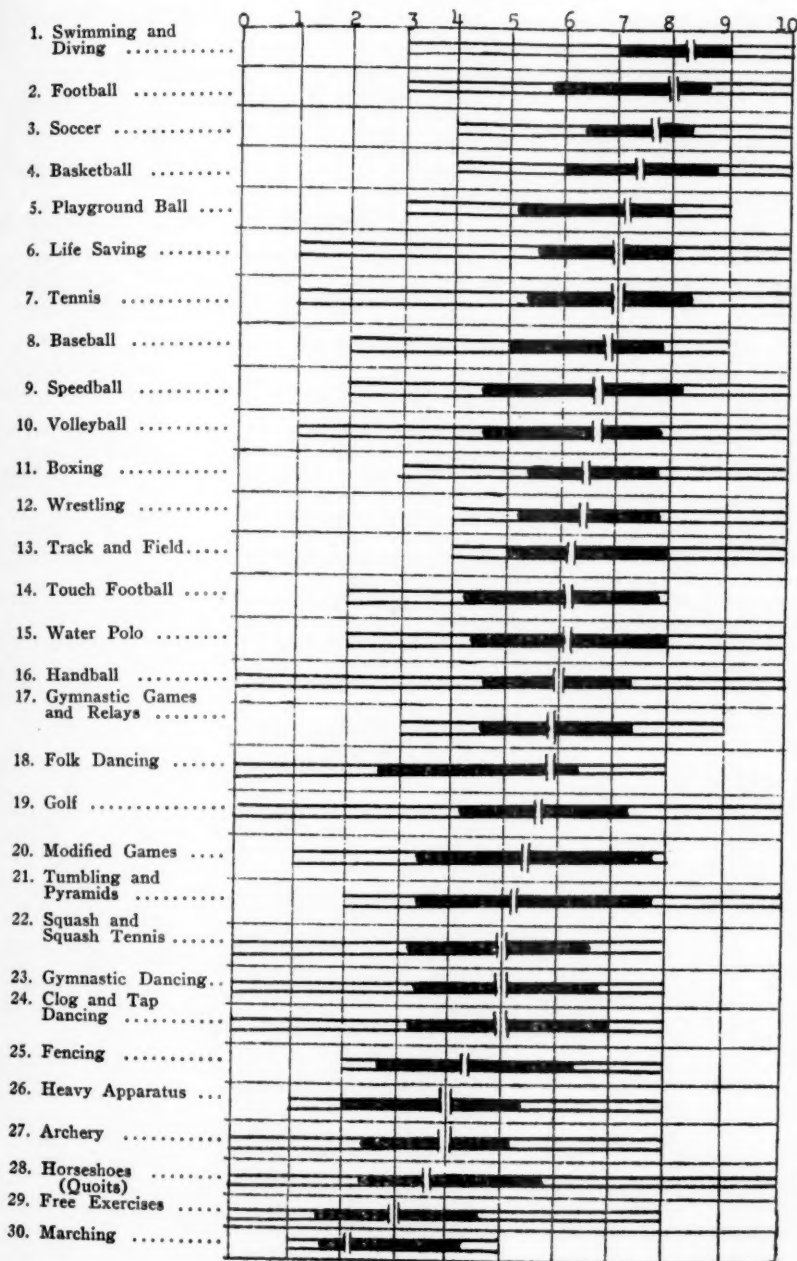


CHART NO. 16-C—12th Grade

Ranked Median Scores for All-Round Contribution
 Chart shows median score; average middle 50% range; and total middle 50% range
 (10 represents maximum possible contribution)



Combined Scores for Grades 10, 11, 12

In Chart 17-C the combined average scores for the three grades in all-round contribution show a still higher relative average. Swimming and diving again leads with a score of 8.5; football follows with 7.6; others in order are basketball, 7.5; tennis and playground ball, with 7.2 each; soccer and speedball, each 7.1; volleyball, 6.8; baseball, 6.6; touch football, 6.5; life saving, 6.4; boxing and gymnastic games, each 6.3; track and water polo, each 6.2; wrestling, golf, handball and modified games, each 6.1. Other activities range regularly downward to a minimum of 2.5, given to marching.

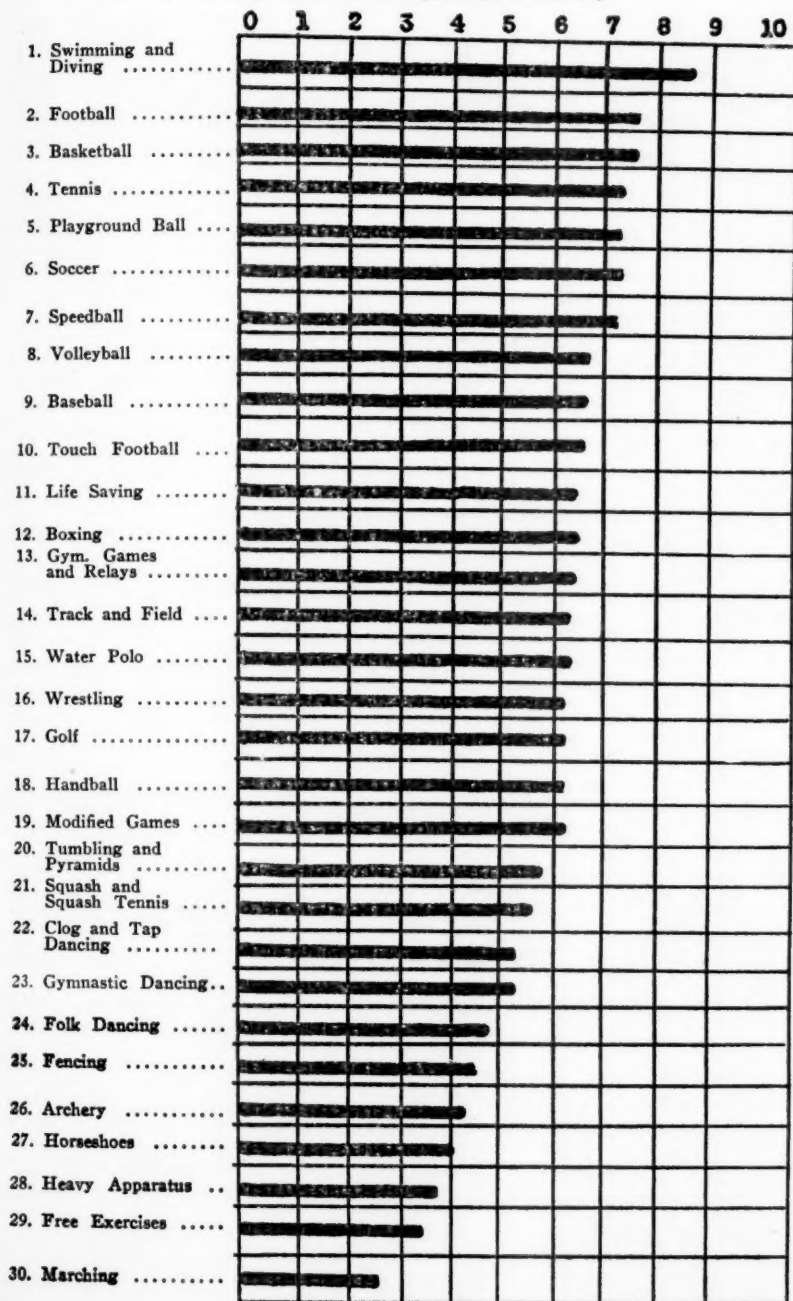
In Chart 18-C, we again have the same list of average scores for the three grades presented under the original classified headings. Under the heading of *aquatics*, the leader again is swimming and diving, with a score of 8.5. In the *combative* section, boxing and wrestling tie with a score of 6.2. Of the *gymnastic* group, the leader is gymnastic games and relays with a score of 6.2. In *individual sports*, tennis is outstanding with a score of 7.2. *Rhythmics* are closely grouped with clog and tap dancing a slight favorite, scoring 5.2. *Team games* are also closely grouped together, ranging from 6.1 to 7.8, with football slightly leading.

CHART NO. 17-C—Grades 10-11-12

Ranked Averages of Median Scores for All-Round Contribution

(Based on scores of 50 Raters)

Curriculum Research—Boys' Physical Education Program—Senior High School Division
 (The scores are arranged in order of descending rank. The bars represent the averages
 of the three median scores for grades 10-11-12)
 (10 represents maximum possible contribution)



Part V. A Comparative Study of Scores

Since the report covers such a large range of school grades, it seemed desirable to summarize the findings in a composite table. These comparisons are presented in Table I. Comparative Scores of the Several School Divisions.*

Average Scores by School Divisions

Section I of this table gives the comparative scores received by a given activity in the various school divisions. It is possible here to note the fluctuations in value of an activity from one division to another. Certain activities will be noted to be fairly well stabilized in value throughout the various grades. For example, gymnastic games and relays have a total fluctuation of only one step from the low score of 6 to the high score of 7, from the elementary division through college. Similarly, marching and free exercises have constantly low scores throughout all the grades, free exercises receiving a minimum score of 3 in college to a maximum of 3.7 in senior high school. Swimming, on the other hand, had a consistently high score throughout with the exception of the elementary division, where it dropped to 4.4. From there on, it ranged from 7.7 to 8.4. Modified games had a similarly consistent median score throughout, ranging from 5.4 to 6.3. Many activities naturally jumped sharply from zero in the elementary or intermediate grades, to high scores of 7 or better in senior high school and college.

Ranking of Upper 50 Per Cent by School Divisions

In Section II of table I, there is presented a picture of the third and fourth quartiles or upper 50 per cent of the activities on the basis of rank, in each of the various school divisions. This selection was made in order to give more emphasis to the upper range of activities from the standpoint of relative value. It will be noted here that swimming is rated first in each division with the exception of the elementary, where it is replaced by gymnastic games and relays.

Several activities failed to receive mention in the upper 50 per cent in even a single school division; notably, fencing, heavy apparatus, archery and clog and tap dancing. Activities mentioned once only were wrestling, free exercises, marching, golf, horseshoes and squash. Activities mentioned twice include boxing, tumbling, handball, gymnastic dancing, folk dancing, touch football and water polo. All other activities, thirteen in number, were mentioned as in the upper 50 per cent in at least three different school divisions. Swimming and playground ball were the only two receiving scores in all

* The scores from last year's report on the College Division are included in the chart for purposes of comparison.

five divisions. Life saving, gymnastic games, tennis, track, baseball, soccer and volleyball were mentioned four times.

Comparative Scores and Rank by Grouped School Divisions

Next it seemed desirable to secure a composite picture of average scores and ranks for several combined school divisions. It is recognized that the average or all-round value of an activity for twelve grades is not very significant, since there are such marked fluctuations in value for an activity between an elementary division and a senior high school division. An activity that ranks very high for an elementary grade may have an insignificant score in the senior high school. Such a score is particularly weakened by the fact that so many activities received no mention at all in the elementary division. This picture is presented, however, for what it is worth in the first double column, in Section III of table I. Column 2 of this section presents the grades 1 to 6; column 3 the grades 7 to 12, combining the junior and senior high schools. It is thought that these two ratings would be particularly valuable as indicating the ranges of program for the elementary schools as compared with the high schools. Column 4, Section III presents a little different picture of the grades 4 to 14 which includes the junior college. This leaves out the elementary division which is so sharply distinguished from the others in subject matter.

The scores and ranks in Section III were secured in each case by adding together the average scores from Section I for the grades concerned and dividing by the number of school divisions. This gave the average score for those grades or divisions. The rank was then determined on the basis of these scores, number 1 again representing the highest rank.

Here again it is interesting to note that swimming is the leader in each group with the exception of grades 1 to 6 where it took second place to gymnastic games. The lowest score, 15, for the upper 50 per cent ranking was given twice to handball, once to boxing and once to football. Boxing received no other recognition. Free exercises was recognized once in the first six grades with a rating of 14. Marching similarly was recognized once, with a rank of 13 for the first six grades. Gymnastic dancing also received one rating of 12 in the first six grades. Touch football likewise received one rating of 12 in the junior and senior high school. Folk dancing was recognized twice with a rating of 5 in the first six grades and a rating of 10 for the twelve grades combined.

All other activities received ratings in the upper 50 per cent in at least three different school division combinations. Those mentioned three times were: tumbling, basketball, football and speedball. It is

striking that ten activities were mentioned in every one of the four grade groupings. These included life saving, swimming and diving, gymnastic games, tennis, track and field, modified games, baseball, playground ball, soccer and volleyball. It would accordingly be assumed that activities so frequently mentioned would naturally deserve a significant place in the program in any school division.

Selection of Outstanding Activities

In attempting to determine those activities that might be considered the most significant or outstanding for the public schools perhaps the simplest method is to take the number of frequencies of mention in the various public school divisions. By taking the activities that are mentioned in at least two of the four school divisions, we find seventeen out of the thirty that might thus be considered outstanding. These are as follows: In the *aquatic* group, life saving was given three ratings; swimming and diving, four. In the *combative* group, none received more than one mention. In the *gymnastic* group, gymnastic games and relays was rated four times; tumbling and pyramids, twice. In the *individual sports* group, track and field was rated four times, tennis three times; in the *rhythmic* group, gymnastic dancing and folk dancing each received two ratings; in the *team games* group, playground ball received four ratings, modified games, baseball, soccer and volleyball each three, while basketball, football, speedball and touch football each received two. If the college ratings had been added to this group, it would have modified it only very slightly. On the same basis of two ratings, it would have added to the list boxing, water polo and handball.

If we wish to go a step further and select a smaller number of outstanding activities, we find from the four divisions of the public schools, ten activities rated in three or more school divisions. This list of ten would include life saving, swimming and diving, gymnastic games and relays, tennis, track and field, modified games, baseball, playground ball, soccer and volleyball. Oddly enough, this group is identical with the ten activities receiving mention in each of the four grade groups.

TABLE I

Comparative Scores of the Several School Divisions

Section I gives a comparative picture of the average all-round scores for each activity in the several school divisions on the usual basis of 10 as the maximum possible score. Section II presents the upper 50% of the activities according to the scores in Section I, indicating their rank from 1 to 15, 1 representing the first or highest rank. Section III presents averages of both the ranking and the scores for different groupings of grades. The upper 50% only are shown in each group.

ACTIVITY	Section I					Section II					Section III				
	Comparative Scores by School Divisions (10 is highest possible score)					Comparative Ranking by School Divisions (1 is highest rank)					Averages of Different Grade Groups Rank on Basis of 1-15 Score on Basis of 10-0				
	El. 1-3	Int. 4-6	Jr. 7-9	Sr. 10-12	Coll. 13-14	El. 1-3	Int. 4-6	Jr. 7-9	Sr. 10-12	Coll. 13-14	Grades 1-12	Grades 1-6	Grades 7-12	Grades 4-14	
											Rank Score	Rank Score	Rank Score	Rank Score	
Aqu.															
1. Life Saving		5.3	6.0	8.4	6.8										
2. Swim. & Diving	4.4	7.7	8.2	8.4	8.3	4	1	1	1	1	1.2	2.6	1.2	1.2	
Comb.															
3. Boxing			5.5	6.4	6.7				12	12			15	6.0	
4. Fencing			7.2	4.0	5.0										
5. Wrestling		3	5.0	6.2	5.8			15							
Gym.															
6. Free Exercises	1.3	1.8	3.2	3.7	.3	6					14	1.6			
7. Gym. Games & Relays	7.0	6.8	6.2	6.5	6.0	1	3	12	13		2.6	1.3	1.3	5.6	
8. Heavy Apparatus		1.5	3.1	3.7	4.0										
9. Marching	1.2	2.3	2.8	2.5	2.0	8					15	1.7			
10. Turn. & Pyramids	.8	4.5	5.5	5.7	5.7	9	8				2.4	1.8	1.3	14	5.2
Ind. Sports															
11. Archery		.6	3.2	4.2	3.6										
12. Golf			4.7	6.3	6.7					11					
13. Handball		3.0	5.5	6.2	6.7		14			13		15	1.3	15	5.4
14. Horseshoes		3.8	3.3	4.0	3.7		15								
15. Squash and Sq. Tennis		.8	4.1	5.0	7.2					5					
16. Tennis		3.9	6.7	7.3	7.3		10	8	4	2	3	4.5	10.2	7.0	6.6
17. Track and Field	1.2	5.1	6.5	6.3	5.6	7	7	10	14		7.4	6.3	11	6.7	16.2
Rhyth.															
18. Gym. Dancing	.2	3.6	4.9	5.3	4.8	10	12					12	1.9		
19. Clor and Tap, Dance		2.8	4.0	5.3	4.2										
20. Folk Dancing	4.5	4.0	3.9	5.0	4.5	3	9				10	4.3	5.4		
Team Games															
21. Modified Games	5.4	6.3	6.3	6.2	6.0	2	4	11			3.6	3.5	14	6.2	7.6
22. Baseball		3.7	6.2	6.7	6.8		18	7	9	7	1.4	1.8	10	6.7	9.6
23. Basketball		.7	7.3	7.6	7.3		3	3	4	4	4.3	7	2.8	11	4.8
24. Football			7.2	7.7	7.3			3	2	3	4.3	7	2.8	11	4.8
25. Playground Ball	2.4	7.0	7.2	7.2	6.6	5	2	4	5	10	4.5	4.5	7.3	2.7	1.0
26. Soccer		5.1	7.2	7.2	6.8		10	5	6	6	4.4	9	2.8	7.2	4.6
27. Speedball		2.5	6.5	7.2	6.6		9	7	9	9	4.0		2.6	12	5.7
28. Touch Football		.9	6.1	6.7	6.0			13	10				2.6		
29. Volleyball		3.9	7.0	6.5	6.5		11	6	8	15	4.6	11	2	9	6.8
30. Water Polo		4.4	6.3	6.5						13	1.2				

CONCLUSIONS

From this rather large mass of data, it is difficult to draw significant conclusions other than those pointed out in connection with the various scores presented in charts and tables. Again it should be stressed that the statistics presented are of a subjective opinion type and hence should be interpreted on that basis. The committee feels that at least some progress has been made toward an evaluation of activities for inclusion in the curriculum for the various grades.

It will, of course, be obvious that many educators will differ sharply from some of the conclusions and many of the evaluation ratings shown in the study. From personal experience and from practical first hand contacts, many readers will recognize that a given activity offers great possibilities in the way of contributing to all of the proposed factors. In some cases, however, a very desirable activity may be difficult to administer in public schools because of the danger factors involved. Boxing and wrestling are probably of this type. Football and certain other strenuous group games would be similarly classified for certain grades. Thus, in actual practice, some activities may need to be curtailed or limited to certain individuals or perhaps thrown out entirely from a given grade program, because of the dangers of administration. This procedure may be necessary in spite of the fact that the activity is given a very high rating in the evaluation charts.

It is probably highly desirable that exceptions should be taken by readers, to some of the ratings here presented. This will tend to arouse discussion and bring about some intensive thinking and analysis on the part of educators throughout the country. This inevitably will lead to a more thorough re-organization program by which, in time, a curriculum of activities should be established that will be very superior to anything up to date.

From the standpoint of practical use of these statistics, a logical procedure would be for a teacher, head of department, supervisor, principal or superintendent to select for a given grade or school division, those activities from the upper ranges of the evaluation charts, for which equipment and leadership can be provided. This selection process naturally should start at the top of the rank and work down. The fact that the institution is not equipped to handle a given activity, such as swimming, for example, should not mean that this activity would be permanently eliminated from the curriculum. Rather it should place responsibility on the administrator to take immediate steps to secure such equipment and leadership, particularly if the activity had been given a high ranking.

The greatest value of this study may be in the emphasis on those activities that should be stressed, whereby institutions will be per-

suaded to secure adequate and proper equipment and leadership. Biology would hardly be left out of a high school or college curriculum simply because the institution lacked microscopes. If the activity were considered important the microscopes would probably be secured. In a similar manner, significant activities in physical education should be provided for in terms of their relative value.

RECOMMENDATIONS

The work of the committee up to date seems largely preliminary in view of the fact that a determination of the value of activities by grades merely helps in the selection of actual subject matter to be included in the program. The next step in the curriculum construction would seem to be a defining of the limitations of an activity for a given school grade or division; namely, what particular elements of the activity should be taught in that grade? This would naturally require sets of standardized tests, both of skill and of knowledge covering the material to be presented. With such provision, it would be possible to set up specific standards of accomplishment for given grades or preferably school divisions. Thus a student at the completion of the junior high school would be expected to be able to pass certain standard tests of accomplishment in skill and knowledge covering the subject elements presented up to that point. With such a provision, physical education might hope to justify its name and be rated on a par with other subject matter in education.

The committee would strongly urge that the study be continued with some such procedure as the above defined project outlined for the next year's work. The committee would be materially helped if other members of the society would send in frank criticisms and suggestions as to weaknesses in procedure or ways of improving the study. It is also urged that if the society considers these findings of sufficient significance, steps be taken to secure approval and cooperation of other educational agencies such as the National Education Association, the National Recreation Association and others. This material, if valuable, should be made available to school administrators and physical education leaders throughout the country.

COMMITTEE:

Edgar Fauver, Wesleyan University
W. L. Hughes, Columbia University
William Ralph LaPorte, (Chairman),
Southern California.

Report of the Committee on Terminology

THE development of a profession requires a certain amount of standardization of terminology in its field. While the extent to which standardization should be carried may be a debatable point all will probably agree that some amount of standardization is desirable.

Our objectives and curricula are undergoing continual change. This is natural and desirable. A rigid standardization which allowed of no change would be stultifying and would act to retard progress. At the same time only confusion can result from a lack of agreement as to what terms mean. As regards standardization of terminology there must, then, be some optimum middle ground which we should seek to find.

Other than the report of your committee on Terminology in Tests and Measurements made last year, the committee knows of no organized attempt toward standardization since 1915 when a committee of Y.M.C.A. directors submitted a report on Gymnastic Exercises. It seems apparent, therefore, that the development of a glossary of terms would be of assistance to the growth of acceptable curricula.

This report cannot hope to do more than to indicate the problem and to encourage discussion. This Society should decide as to the direction and the extent to which it wishes to go in the matter of unifying terminology. When this has been done various phases of the problem can then be attacked.

Various methods of procedure to be followed in revealing the need of unified terminology suggest themselves. Among these the following are listed.

1. Make a survey of courses of study for the training of teachers of physical education to determine the extent to which lack of uniformity exists in the naming of courses. Such a study was made by N. P. Neilson and showed that in 28 colleges and universities conducting teacher-training courses in physical education 671 different terms were used for these courses. This same condition was noted in the report of the committee on Professional Curricula in Physical Education of the American Physical Education Association under the chairmanship of Dr. J. H. McCurdy.

The report of this committee and the Bulletin by the California State Department of Education on "A Curriculum For The Professional Preparation of Physical Education Teachers For Secondary Schools" constitute indirect attempts at standardization of terminology.

2. Study recent literature in this field to bring to light confusion in terminology.

3. Study the causes of changes in terminology as a help in determining principles upon which standardization should be based.

4. Study the literature in the field to determine original sources of terms.
5. Study college activity programs in physical education as a guide toward present practices.
6. Examine comparable fields of activity such as that of general education to provide the closest possible correlation between physical education terms and those of other phases of education.

It is apparent that terminology is, in part, inseparable from the curricula of activities in physical education. To this extent the efforts of this Society toward developing unified curricula must precede or, at least, go hand in hand with the standardization of terminology.

In the field of athletic activities official rule books help, to a large extent, to standardize terminology. This applies particularly to rules, objects played with, and playing terms. Terms used as a part of teaching methods and organization not usually treated in official rule books show considerable lack of uniformity. These phases of athletic sports could profit by an additional glossary of related terms which relate to the sport in question but which are not found in rule books.

Dr. S. C. Staley in his book on Calisthenics has studied terminology in that field and the terms which he has suggested are worthy of serious consideration.

As an illustration of a procedure which may be followed to determine the extent to which lack of uniformity in terminology exists sample studies were made of the terms used by four authors of leading books on games and of terms used in two leading books on stunts.

Although the games studied are not all of the type used in college programs for men, many of them are used. Conditions found here will probably also hold to a certain extent for other college activities.

Ninety-four separate games were listed by these four authors. These appeared in the four books 135 times. Each game appeared 1.4 times in one or more of the four books. In only nine cases, however, were the same games given different titles. These 94 games were given 124 times without reference to previous authorship. Twenty-eight games which appeared in other of the books were described by one or more of the four authors without giving recognition of previous authorship.

In the study made of stunts given in two books on stunts, 72 separate stunts were found. These 72 stunts were described 179 times in the two books or an average of 2.5 times by the two books, some of these stunts being described more than once in the same book. The same stunts were listed under different names 21 times. Forty-six stunts were listed without recognition of previous authorship. Ten stunts were listed by one author without recognition of their use by the previous author.

An inspection of some of the books listing relays revealed such a variety of terms that it did not seem worth the trouble involved in

listing them. Six types of relays were, however, referred to 15 times by four authors and were used 8 times without recognition to previous existing authorship.

A brief summary of some of the points revealed by these studies shows that 9.5 per cent of the games and 29 per cent of the stunts were listed under different names. On the average, for these two types of activities involved in this limited study, lack of uniformity as to terminology existed to an extent of 19 per cent.

Another fact deserving attention is the failure of authors to give complete recognition to previous authorship. This condition existed on the average for the two types of activities examined to the extent of 22.8 per cent not counting first mentions.

These observations are not intended as criticism of individual authors but merely as indication of one of the avenues by which confusion in terminology enters. If we have thought about it at all we have, doubtless, all of us observed that writers in our field have frequently written of activities or ideas without giving recognition to some previous writer. This practice constitutes a problem of professional ethics and is a source of confusion in terminology.

In part the difficulty can be corrected only by more care on the part of writers in this field. However, if this Society or some national organization could formulate a glossary of terms giving authorship much of the confusion noted could more easily be avoided.

RECOMMENDATIONS

I. An effort should be made by this Society to secure better standardization of terminology in Physical Education than now exists.

II. When accepted terms and meanings are arrived at they should be made available to workers in college physical education programs.

III. New terms or meanings should be incorporated into glossaries as they become worthy of approval.

IV. Effort should be made to make authorship known and to give credit to original sources and users.

V. Effort should be made to secure cooperation of workers in Physical Education toward using existing terms where possible rather than to create new terms or to give new meaning to old terms unless adequate reasons are available.

VI. If this Society wishes to continue work toward standardization of terminology, another larger committee should be formed and individual members assigned to such duties as the following, which are given merely as suggestions.

Collect all pertinent published material from which to select terms and their meanings on such topics as:

1. Administration.
2. Examination and classification of students.
3. Equipment.
4. Records and reports.
5. Tests and measurements.
6. Course titles.
7. Individual gymnastics.
8. Swimming, football, basketball, boxing, wrestling, and all other activities of the college program. (In all activities teaching and playing methods should be included.)

Glossaries prepared in this way should be submitted to this Society for approval or correction.

Committee:

G. N. Messer
A. R. Winters
D. K. Brace, Chairman.

Report of the Committee on College Entrance Credits

IN view of the detailed discussion already devoted to this problem at the joint meeting of the Society of State Directors of Physical and Health Education and the Society of Directors of Physical Education in Colleges on December 29, the Committee is making a very brief and condensed report.

A little more than a year ago, at the suggestion of the committee, Mr. Benton Salt who was at the time working for the Doctor of Philosophy Degree at Teachers College, Columbia University, undertook the study of this problem of college entrance credits for the Society with your Committee and especially Dr. J. F. Williams acting in an advisory capacity.

Mr. Salt began this investigation, drew up a plan of procedure, gathered a considerable amount of data, but received an appointment in Florida for the summer, and this fall accepted a permanent appointment at the University of Florida. In view of this situation, the Committee suggests that the study be continued by Mr. W. F. Meredith, a graduate student at Columbia University, who has been working on this problem and has already made considerable progress in the collection of data. Through Dr. J. F. Williams, a member of the Committee, it will be possible to keep in contact with the progress of the investigation and to serve in somewhat of an advisory capacity.

Your Committee therefore makes the following recommendations:

I. That the Committee on College Entrance Credits in Physical Education be changed to an advisory committee.

II. That we give the support and the backing of the Society to Mr. W. F. Meredith to continue the investigation of college entrance credit.

III. That we all, in our own institutions, do all that we can through the faculty and administrative officers, to have physical education accepted for entrance credit to the extent of at least one unit from those high schools offering programs that meet the approval of the State Department and District Accrediting Associations.

Committee:

J. H. Nichols, Chairman
O. C. Bird
G. L. Rider
J. F. Williams

Report of Committee on Construction and Material Equipment

THE collection of plans, which is on view in the Hamilton College Library was studied by representatives from five institutions during the past year. While the number of institutions making use of the collection was not large, it shows a greater interest than heretofore. There were three colleges and two normal schools represented in these studies.

Frequent requests are made by members of the Society and others to have the plans sent to them for study. The committee regrets that this is impractical, and it has considered various schemes of making the information more available. To partially satisfy this need, it is recommended that one or more plans be published along with our annual proceedings each year. The yearly publication of such plans would be timely and the cost would probably be met by the demand for such information. The present collecting of plans would be continued for their reference value.

The best results from the physical educational viewpoint will be obtained by publishing plans of buildings or fields that have been in operation a year or more. The architect or engineer and the director of physical education should be asked to make separate reports; the architect to give exact plans in single line drawings of floors and elevations, and also specifications; the director to give the practical uses, the actual cost of erection and the maintenance costs, the plan and scope of physical educational work, the number of undergraduates in the institution, and the amount of time each unit of the plant is utilized. The director should be critical and constructive, pointing out defects and their recommended remedies as well as emphasizing those parts which have proven successful. He should state whether the purpose of design is carrying the program as planned or whether the program is necessarily adjusted to the conditions.

The comparison of program with the equipment and vice versa will develop conceptions of design which will more nearly fit our exact needs and bring about the fine adjustments necessary to keep costs down.

The committee wishes to thank those who have sent in plans and asks that others accept the personal responsibility to secure plans for the collection. A complete list of the plans on hand will be sent to the members during the year.

Committee:

Albert I. Prettyman, Chairman
J. F. Bohler
G. E. Little

Problems for Future Study

JESSE F. WILLIAMS, M.D.
Columbia University

The Nature of Problems

PROBLEMS are roughly of two kinds: (1) those that involve human relationships, administrative detail, and adaptation of means to ends, and (2) those that are susceptible to research, either statistical or philosophic in character. The former problems are to be solved on the job. Little of contemplation or the wonderful array of statistical summaries avails in the matter. The problem is to get someone to cooperate, more space for an activity, or finances to pay for an obligation already made. While cooperation, space, and the purchase of dead horses are primarily problems of administration, the solution of other problems may make these tough administrative ones more easy of accomplishment.

The problems of research belong to him who has the time and capacity to study them in detailed fashion. Essentially they are not for a Society such as ours. By cooperative effort, however, we can do something along these lines but we are optimistic indeed if we expect a great deal from the committees of this Society. In the first place the membership is employed in full time jobs and the little time that can be stolen from leisure (not to mention professional duties) can contribute but a small bit to the tremendous number of hours required for a comprehensive and thorough investigation of any problem. We may, however, increase our power in research by lending our membership and the Society through an official committee to some competent graduate student. This procedure was followed in the very fine study made by our Secretary-Treasurer, Dr. H. A. Scott. This study of the personnel of the Society was reported to the group in New Orleans two years ago. It has given us significant data on the Directorship. It is this sort of cooperation with candidates for the doctorate that is very worthwhile. Such extension of the Society's work through committees will depend in part upon the availability and competence of cooperating candidates.

It would seem then that the work of cooperating committees represents the chief procedure for handling problems, although it should be said that whenever members can find time, there are those who are competent to undertake research. In addition to the study by careful, exact, and detailed methods of research problems, there are reports of great value that this membership can make. At present there seem to me three reports that should be made at this time and to

which I believe the Society should address itself. These are:

- I. What is the aim of physical education in college?
- II. What are the objectives of physical education in college?
- III. What should be done to realize these objectives?

What is the Aim of the Society?

Just ten years ago a committee of the Society gave a report on the Aims and Scope of Physical Education. Should we not cast up accounts again? In the light of present social developments and probable emphases in the next ten years should we not state again the aim and scope of physical education?

"One's reach should exceed one's grasp or what's a Heaven for" wrote Browning with a fine sense of the value of an aim. The reach points the way, gives a view of the goal, always attainable and never attained. To set up again the aim of physical education in the light of significant social and political values, to touch hands with frontier thinkers and yet to march with the crowd, should be an inspiration and help to all of us.

What are the Objectives of the Society for Physical Education?

Here, of course, we come to precise statements, exact ends, and concrete outcomes. These may be of two sorts: administrative and educational. The former comprises such matters as qualifications of personnel, equipment, et cetera; the latter such outcomes as particular skills to be learned, exact achievements to be made.

What Should Be Done to Realize These Objectives?

The adaptation of means to ends is always the mark of a superior administrator or an excellent teacher. It signifies intelligence and understanding, and grows often with experience. To determine the most favorable administrative policies, or the essential equipment, or the needed staff, are problems of magnitude but vital if our aim is to be approached and our objectives reasonably attained.

Limitations of Such Studies

It is clear of course that studies, as outlined above, are speculative and philosophical in character. The error we run in such reports is to assume for them a validity quite beyond what is reasonable. They do not necessarily represent truth because the ingredients have not been facts so much as they have been opinions. If we will recognize their limitations, we may find such reports exceedingly profitable for all of us.

Projects for Future Study by the Society of Directors of Physical Education In Colleges

C. H. McCLOY

University of Iowa

THE topic "Projects for Future Study" would have been a relatively easy subject, but the addition of the words "by the Society" makes this somewhat harder, for it implies that the projects are to a certain extent cooperative ones. Of this kind of researches, many are started but few are finished: so much so, indeed, that cooperative research is considered by some to be like the disillusioned bride's opinion of marriage—"a delusion and a snore!"

The list of possible cooperative projects is, however, quite extensive, and we shall choose from a considerable field and present them with but little detail.

I. PROBLEMS CONCERNED WITH GENERAL FUNDAMENTALS

1. *How important is exercise in the promotion of health?* This may be considered from the standpoint either of physical health or of mental health. Many of the claims of physical educators have been extravagant. A review of the literature reveals a paucity of objective experimental results. This type of problem would probably have to be attacked partly with rating scales and partly by animal experimentation. The rating scale phase of the study must be a cooperative one, because of the large number of individual records required. Different laboratories might undertake different aspects of appropriate animal experiments.
2. *Does exercise stimulate the growing child to increased growth and development?* How true are Tyler's postulates in this field even in the elementary school range? Is growth further stimulated within the college age range? There were many tales of rapidly increased girths written from training camps during the early part of the war. Was this *growth*, muscular hypertrophy, or myth? This would be a straight-forward anthropometric experimental study. It would require a very large number of data. Such a study, incidentally, might throw a good deal of light upon the alleged value of intensive exercise taken by the individual in his home!

* Numbers refer to the corresponding numbers in the bibliography at the end of this paper.

3. *What about the question of posture?* What is good posture? Is it important for health? What of standing and walking postures? These questions arise perennially and are usually "solved" subjectively! It would seem to me that the time is here when a study of posture that will consider both individual differences and the relationships of various parts of the body to a line through the center of weight, might prove a fruitful one. A casual study of skeletons shows that there is a wide range of difference in the torsion of bones and a range not quite so wide in the relative position of the acetabulum to the sacrum and to the pubis. It seems inconceivable to me that, with differences in bony skeleton, in build, and in cartilaginous structure, all individuals *should* have the same posture. If we did nothing but debunk some of the present posture teaching, it would be a quite worthy effort.
4. *What price athletics?* What is the balance of positive values as contrasted with the possible harms? It seems to me to be necessary to study this problem cooperatively in order to secure a sufficient amount of data. I suggest at least three lines of approach.
 - a. A study of the longevity of athletes as contrasted with that of the non-athletic group. A study of the longevity of athletes has been made by Dr. Dublin.² It seems to me that it would be worth while to conduct such a study upon a larger group and at the same time to study the longevity of non-athletes from the same institutions. I should further suggest that every attempt be made to secure the age at death of the parents of both groups, or the age at present where these are not deceased. This would allow a check to be made upon heredity as related to the longevity of both groups. In such a study one of the essential preliminary investigations would be to check on the prevalent assumption that the athlete is "a highly selected individual." It is quite possible that this alleged selection is simply one of size, strength, and relative viscosity of muscle, together with certain mental and character qualities as applied to athletics. It is most probable that not one of these may be related to vitality or longevity.
 - b. A study of the injuries of varsity and non-varsity athletes: what is the effect in later life and how does the effect of injury balance against educational benefits? The only comprehensive study in this field seems to me to have been a very non-conclusive one.³
 - c. What educational benefits can be *proved* to be obtained from athletic experience under controlled experimental conditions? Much has been said of the alleged character values accruing

from college athletics. There has been no attempt to check on the *minus* as well as on the *plus* results in this field, and the problem is a wide open one.

II. SOME PROJECTS AROUND THE PROFESSIONAL CURRICULUM OF PHYSICAL EDUCATION

It might be asked why this should be considered the task of this Society. The answer is that the schools represented by this Society are concerned with this matter. There would seem to me to be at least three types of problems which might be susceptible to cooperative study.

1. *In the professional training curriculum, what are the real needs as opposed to the merely traditional ones?* Let us illustrate. One year of chemistry is quite a common requirement. This chemistry is the usual freshman inorganic chemistry, a common basis laid down by the chemical general practitioner for all types of future chemical application. It seems probable that the chemistry used by the ordinary student of physical education is largely limited to that which will assist him to understand his physiology and his hygiene. If he is going into these fields extensively it is equally obvious that he needs much more chemistry than this. If he is going to become a physiologist it would seem that he should know not only inorganic chemistry but organic and physiological chemistry as well. For those, on the other hand, who will become largely leaders of classes, coaches of teams, and administrators of departments, and for whom only a *limited* course need be given, would it not be possible to teach all of the *fundamentals* of chemistry in a much shorter time than is given at present to this general freshman course? No attempt is made here to settle this question, but we raise it simply as a type of question needing attention in a curriculum study. Another illustration relates to the matter of skills. Twenty years ago, almost every teacher of physical education was trained in the skills not only of athletics, but of apparatus work, tumbling, swimming, and dancing. Today one finds professional teachers coming into our summer schools who show little evidence of such training. A recently tested group of twenty-nine showed only fifteen who could do the knee mount on the horizontal bar; fourteen who could perform a back circle to the front rest from the hang; only six who could do the "kip" or up-start; and but four who could do a hand spring. This is, of course, not a comprehensive list of skills, but it illustrates a need for some investigation into the standards for training in skills.
2. *Experimental studies in curriculum.* Some studies of this nature have been outlined recently by Dr. Oktavec.⁴ It would seem to

me that studies might be focused upon the relative effect of teaching subjects in different ways, and that further experimental studies might be made of the time needed for adequately teaching such subjects. Many of the semester hour requirements now laid down for theory subjects are determined solely by tradition or by the opinion of enthusiasts. Almost any physiologist will think that at least twelve semester hours should be given to physiology. The psychologist may differ with him but he will probably think that at least that amount of time should be given to psychology. The practice curriculum is not infrequently dictated by the desire to teach every possible type of activity that any school system may require. Would it not be wiser to attempt to limit this curriculum to such activities programs as are most worth teaching and teach them more effectively?

3. *A study of the matter of state certification of teachers as related to the professional curriculum.* I have in mind much the same sort of situation as is seen in the relation of state medical examination to the curricula of medical schools. It would seem to me that somebody should initiate such a study, and that probably the American Physical Education Association should take the lead in an attempt to secure more uniformity in such certification requirements.

III. RESEARCH IN THE REALM OF PROGRAM

This program might be in the form of physical education or of health education.

1. *What are the objectives of the teacher?* Which of these objectives are ends-in-themselves objectives for the pupil? Which are means-to-an-end objectives for the pupil? Which are purely teacher objectives but not pupil objectives? Which of the three types given above are related primarily to the present and which are primarily related to later life? Which are utilitarian? Which educational? Which are simply skill-for-use-as-an-educational-tool? And which are for leisure time carry-over? It would seem to me that much of the physical education of the present is not related to any specific objective. Research in the field of objectives still has some distance to go. If this were purely a philosophical concept we should not propose it here. It is suggested that the topic might be approached first with the technique of job analysis, to accumulate a master list of objectives. Second, it seems feasible to analyze this master list by the techniques of philosophical research, scrutinizing it from the standpoint of criteria borrowed from related sciences and determining whether or not the proposed objectives are valid. Should they be broken

up into more specific elements or should they be combined? Third, the resulting list might be submitted, so far as a college program is concerned, to perhaps 10,000 college students. These students might check this list to determine which of the *teacher objectives* are *significant to the pupil*, and the analyzed results should be available as added illumination to guide the procedure of the teacher. All too little attention is given to the mind-set of the pupils towards objectives.

2. *The interests and attitudes of the pupil.* In what is he *interested*? What are his attitudes toward physical activity? Does he want to train? How skilled is he now? Would he like to develop a higher grade of skill? Would he like to have great muscular strength? What are his leisure time preferences? What are the preferences for leisure time activities of business men who were formerly students? (See studies by Scott⁸ and Saxman⁹). How quickly does he tire of various activities? How long can we keep him interested? What is the range and the dispersion of the span of his interest? What are his conditionings as well as his hereditary differences? A number of studies conducted by the Y.M.C.A. in this field⁷ show a wide range of individual differences in each of these items, yet most programs that endeavor to allow for individual differences do so without accurate knowledge of what the facts may be. This kind of study lends itself easily to cooperative work.
3. *What are the criteria for selecting the best teaching material?* What standards must we hold for the selection of material for our use? This would be a philosophical research primarily but one well worth repeating about once every five years.
4. *What should be the content of teaching material in order that it may offer the laboratory situations best enabling the teacher to accomplish his objectives?* How should it be organized?
5. *What are the unit activity objectives of each type of physical activity?* For example, in teaching any specified activity such as basketball, what are the teacher objectives for this one sport?
6. *What is the pupil's attitude towards any given activity, and what can be done to change undesirable attitudes?* For example, most men feel that it is rather "sissy" to engage in gymnasium dancing. Should this attitude be changed? If so, how can it be changed? Or should the content of the activity itself be altered?
7. *What is the best teacher procedure?* That is, what should the teacher *do*? How? One would need first to approach this problem with an adequate philosophy of physical education as a basis. The psychology of physical education would be the principal tool with which to attack the problem. How do we learn? What are

the facts regarding the natural method? The formal program? Should we teach primarily by the "part" method or by the "whole" method or by what combination of the two? Why should we strive for individual adjustments? How can we secure transfer of training in the character field? What are the best adaptations of the project method in the college field of physical education?

8. *What do we expect the pupil to do in this educational situation?* It should be obvious, if we teach by project methods that the teacher will provide *situations* in order that the pupil may react to them. But the *pupil* will also be expected to do something as a result. What?
9. *How may we best measure our results and use such measurements as indicators of progress?* Would it be possible for this society to divide up the tasks of research in measurement among a number of specializing sub-committees, each led by an expert in one field of measurement? Could we in this manner devise fairly adequate tests of athletic condition; health; motor ability; motor educability; motor capacity; achievement; aptitudes; and behavior or character skills? Could these tests be devised in such a manner that they might be given in most cases as group tests, taking up but little time?

This whole unit under III would seem to me to be vital for the *educational* progress of our profession. Since our activities are relatively so objective they should be peculiarly susceptible to the research approach, and they could easily be done cooperatively.

SOME GENERAL CONSIDERATIONS

I. More of our research should be objective and much less of it conducted by questionnaire; we should abandon the procedure of endeavoring to settle matters of fact by securing an average of the opinions of those who do not really know. This, however, does not mean that many projects, particularly those seeking opinion or attitudes, should discard the use of the questionnaire.

II. More of the *fundamental* problems should be attacked, and fewer problems should be attempted which are based upon possibly erroneous assumptions. We believe the assumptions should be tested first.

III. The bulk of the research should center upon producing results through program, and should emphasize the whole range of physical education from varsity athletics to physical programs for the motor moron. There is indeed a real need for research to be done on the lowest skill range. This will correspond to a certain extent to research on the mental condition of the feeble-minded except that this

is, of course, the physical education of the individuals who lack *motor* educability, though their minds may be quite normal.

IV. There is a need for more consideration of the whole strategy of research and an attempt should be made to secure sufficient funds to do this effectively.

If any of us were to be given a million dollars and were asked to develop the best elementary school system of education that could possibly be devised for the city of Utopia, common sense would dictate that the best method of approach would *not* be to adopt the procedures suggested by the majority of teachers in the present elementary school system. A much better suggestion would be to persuade a dozen of the best educational minds in the country to gather together for a month to consider the best philosophical hypotheses of education, and to come to some agreement regarding fundamentals of method and content. In every case these conclusions would be based upon knowledge of such facts as were available. The resulting scheme of education might not be a perfect one but it would more closely approximate it than would the collection of the opinions of those who think largely in the grooves plowed by *their* teachers.

Would it be possible for a fund to be secured through this Society which would enable a dozen outstanding thinkers in our field, with a number of leaders from related fields to retire for a month to some retreat? From such a conference might come a philosophy and methodology of physical education which, while not complete, might be a basis for further studies of a more specific nature, and thus outline the grand strategy of our research for the next decade.

In our opinion the present hit or miss method of improving our science is no particular compliment either to our national intelligence or to our professional perspicacity—to say nothing of the *teamwork* we are supposed to have developed through sports!

In this paper I have proposed a number of projects for cooperative research. It is my belief that, contrary to the usually expressed opinion, in cooperation lies the best possibility of progress. This cooperation should, however, embrace the planning of the general strategy as well as the formulation and execution of specific studies.

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Functional Health and the Physical Fitness Index

A study conducted during the Spring semester, 1930, at Cornell University, Ithaca, N. Y.

By CARL G. CHAMBERLAIN and DEAN F. SMILEY, M.D.

P RESENT day programs in health and physical education in the public secondary schools show a marked trend in the direction of segregating pupils into homogeneous groups for physical work in order more nearly to approximate meeting the needs of the individuals within the group. To this end several plans have been proposed for the rough classification of pupils for big muscle activities, the most prominent being the plan of classification proposed by Dr. F. R. Rogers, the present Director of Health and Physical Education for the State of New York.

According to the Rogers' Plan, pupils are given a series of dynamic strength tests, and from this data a Strength Index is computed. The relation of this Strength Index to a previously determined normal Strength Index is expressed in percentage of the norm, and is known as the Physical Fitness Index. This Physical Fitness Index has been proven statistically valid, economical and reliable. (See "Tests and Measurement Programs in Physical Education" by Dr. F. R. Rogers. Teachers' College, Columbia University). The use of these tests as a rough measure of physical fitness is based upon the logical assumption that to rate well one must have efficiently functioning organs and well developed muscles.

These tests are in general use throughout the state of New York, and are being taught to students in schools of physical education, in order that they may have available a means of classifying pupils for physical education work.

The question has frequently been raised as to the relation of these Physical Fitness Indices and the findings of a physician in regard to sound functional health. Accordingly a study was begun in February, 1930, at Cornell University, by Dr. Dean F. Smiley, Medical Adviser and Professor of Hygiene and Preventive Medicine, and Carl G. Chamberlain of the Cornell Department of Physical Education. All medical examinations and ratings were made in the Department of Hygiene and Preventive Medicine under direction of Dr. Smiley; and all of the physical fitness tests were given in the Department of Physical Education under the direction of Mr. Cham-

berlain. The procedure and results are given in the following paragraphs.

Functional Health Ratings

An experimental group of sixty-five Cornell students was chosen at random from the student body. Care was taken to secure a generous sampling of various types, so that the group included a wide selection of physical specimens which ranged from those who were markedly handicapped to Varsity athletes. Each member of the group was then given a complete physical examination by the staff of examining physicians. This examination included complete personal and family histories, as well as a record of the subject's habits relating to the maintenance of good health and physical condition. The exact data secured from the physician's examination were as follows:

Height	Pulse Rate
Weight	Cardiac Function
Nutrition	Blood Pressure
Condition of Skin	Spine
Eyes	Posture
Ears	Abdomen
Hearing	Hernia
Nose	Hemorrhoids
Sinuses	Genitals
Gums	Lymph Nodes
Teeth	Nervous System
Tonsils	Upper Extremities
Pharynx	Lower Extremities
Neck	Varicose Veins
Chest	Feet
Lungs	Urinalysis
Heart	

From these data, the functional health ratings were evolved by Dr. Smiley. If, in the opinion of the physician, the subject was handicapped in any way that would likely impair his normal efficiency from the functional health viewpoint, then he was rated "C" or Handicapped.

Those subjects who were in average functional health, and whose defects, if any, were not of sufficient magnitude to impair their normal functions, were rated as "B" or Average.

Those who were markedly superior; who were free from defect; whose health habits were such that they would likely be in an efficient state, day in and day out; whose weight for age and height was what it should be; and whose tissues were muscle, not fat;—those subjects were rated "A" or Superior.

The distribution of functional health ratings according to the foregoing plan was as follows:

Superior (A) rating.....	5
Average (B) rating.....	41
Handicapped (C) rating.....	19

Physical Fitness Index Ratings

Following the medical examination, each member of the group was tested by the Department of Physical Education according to the Rogers plan. These tests included the following data:

Age in years and months
 Height in inches
 Weight in pounds
 Lung capacity in cubic inches
 Forearm (grip) strength in pounds, right and left
 Back lift, in pounds
 Leg lift, in pounds
 Upper arm and shoulder girdle strength (pushups and pullups)

Next the point scores for the upper arm and shoulder girdle tests were computed by use of the empirical formula:

$$\text{Arm Score} = (\text{Pushups} + \text{Pullups}) \times \left[\frac{\text{Wt.}}{10} + (\text{Ht.} - 60") \right]$$

Following this, the weighted arm score is added to the lung capacity, grip scores, back lift and leg lift to give the Strength Index.

Comparison of the achieved strength index with the norm gives the Physical Fitness Index, according to the formula:

$$\frac{\text{Strength Index}}{\text{Norm}} = \text{Physical Fitness Index}$$

In this manner a Physical Fitness Index was computed for each member of the group. Inasmuch as the norm tables were computed from thousands of actual strength tests, and are therefore presumably reliable, it is assumed by the authors (and also advocated by Rogers) that anyone who is twenty per cent or more above the norm for his age and weight, is physical superior. In a like manner, anyone who falls more than twenty per cent below his norm is assumed from a physical education point of view, to be inferior or handicapped. Hence, all subjects whose Physical Fitness Index was below 80% were rated as "C" or Handicapped; all those whose physical Fitness Index was between 80% and 120% were rated as "B" or Average; and all those whose rating was above 120% were classed as "A" or Superior.

The distribution of Physical Fitness Index ratings was as follows:

Superior (A) rating.....	7
Average (B) rating.....	42
Handicapped (C) rating.....	16

Comparison of Ratings

1. The Physical Fitness Index rating agreed with the medical rating in 36 out of 42 average subjects.
2. The Physical Fitness rating agreed with the medical rating in 3 out of 5 superior cases.
3. The Physical Fitness rating agreed with the medical rating in 13 out of 19 handicapped cases.
4. In the entire group the two ratings agreed exactly in 52 of the 65 cases—an 80 per cent agreement.
5. It is of interest to note that the handicaps which were revealed included the following: ankylosis of right knee; recent appendectomy; amputation right leg; arthritis; frontal sinusitis; undescended testicle; infected knee; gingivitis; deviated septum; Perthe's disease of right hip; loss of vision in right eye; bursitis of left elbow; large inguinal rings; tuberculosis history; immobilization of sacro-iliac joint; atrophied leg following poliomyelitis; overweight; and underweight.
6. A complete table of the data collected for the Physical Fitness Index rating, together with the respective ratings, both medical and physical is given on page 197.
7. Computation of the coefficient of correlation between the two ratings used in the study, by the standard "product-moment" method, gives an "r" of .60 with a probable error of .05. The true coefficient of correlation is probably above the .65 indicated, owing to the fact that only three class intervals were used. Had it been expedient to rate accurately from both functional health and physical fitness viewpoints to a sufficient number of classifications, then the coefficient of correlation would undoubtedly have been higher.

CONCLUSION

It would appear from the results of this study that the Physical Fitness Index is sufficiently objective to be of excellent advantage to physical educators as a rough measure of physical fitness for big muscle activities, but that its use should, however, be restricted to the classification of pupils for big muscle activities, and that it should not be used as a substitute for the medical examination. Coupled with the physician's examination, the Physical Fitness Index should pro-

DATA FOR PHYSICAL FITNESS INDEX

Subject	S. I.	Norm	P. F. I.	P. F. I. Rating	Medical Rating
A1	2085	1719	121%	A	A
A2	995	2114	47	C	C
A3	828	1626	51	C	C
A4	1959	1784	110	B	B
A5	2596	1884	138	A	B
A6	1264	2179	58	C	C
A7	834	1403	60	C	C
A8	1479	2100	71	C	B
A9	1929	2569	71	C	B
A10	1607	1802	89	B	C
A11	2039	2279	89	B	B
A12	2392	1999	120	A	C*
A13	1846	1827	101	B	B
A14	2409	1444	166	A	C**
A15	2455	2058	119	B	B
A16	1707	1773	96	B	B
A17	2268	2114	107	B	B
A18	1940	2196	88	B	B
A19	2395	2391	100	B	B
A20	1258	1888	67	C	C
A21	2424	2238	109	B	A
A22	1960	2296	86	B	B
A23	1770	1723	103	B	B
A24	1692	2402	70	C	C
A25	1995	1539	129	A	B
A26	1260	1375	92	B	B
A27	1997	1811	110	B	B
A28	1740	1908	91	B	B
A29	2005	1802	111	B	B
A30	1680	1702	99	B	B
A31	2921	2553	112	B	B
A32	1338	2121	63	C	C
A33	1408	1750	80	B	C
A34	Test incomplete a/c injured knee which automatically put subject in handicapped rating			C	C
A35	1906	2262	85	B	B
A36	1945	2279	86	B	B
A37	1855	2123	87	B	B
A38	1181	2238	69	C	C
A39	2028	2182	95	B	B
A40	2383	2015	118	B	B
A41	1892	2075	91	B	B
A42	2268	1935	117	B	C
A43	1934	2379	83	B	B
A44	2240	2657	84	B	C
A45	2042	2264	91	B	A
A46	1434	1650	87	B	B
A47	2155	1873	115	B	B
A48	1565	2157	73	C	B
A49	1708	2080	83	B	B
A50	1637	1842	89	B	B
A51	1695	1702	100	B	B
A52	1820	1399	130	A	A
A53	2764	2732	101	B	B
A54	1989	2008	99	B	B
A55	2584	2474	102	A***	A***
A56	2044	2032	101	B	A
A57	1581	1784	89	B	B
A58	528	1682	31	C	C
A59	2091	2279	92	B	B
A60	1535	1564	98	B	B
A61	2027	2140	95	B	B
A62	Test incomplete a/c atrophied leg which automatically puts subject in handicapped rating			C	C
A63	1212	2099	58	C	C
A64	1150	2562	44	C	C
A65	1382	1728	80	B	B

*Case A12 was quite healthy and sound from the viewpoint of ordinary activity, but had a record of frequent fractures, and apparently brittle bones—hence the classification of C in functional health, and the apparent discrepancy.

**Case A14 was also quite healthy and normal except for the fact that his right testicle was in the canal and undescended, hence he was rated "C" and the discrepancy occurs.

***Case A55 was a graduate student 27 years of age. Inasmuch as the experience curves of total strength for age show a marked downward trend after age 23, and it is most unusual for a person 27 years of age to reach the normal, this subject was rated "A" on the Physical Fitness tests, with a P. F. I. of 102%.

vide the physical educator with sufficient data for the classification of pupils to meet individual needs in physical education work.

A major contemporary problem in physical education has been the segregation of pupils into groups in order that individual needs may be met. Several progressive physical directors have utilized these particular tests for such a purpose, in conjunction with the medical examination. It would appear from this study that these people are justified in their procedure.

Measuring the Results of Practice and Instruction

By FREDERICK W. COZENS, Ph. D.,

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ONE of the many uses of measurement in the program of physical education is that concerned with the progress of students throughout the semester in a given activity. In this connection we should ask ourselves very definitely, "Have the students in the class made progress in the particular activity and, if so, how much progress has been made?" The determination of such progress will involve measurement at the beginning of each semester or training period and again at the end, using the same measuring instrument and identical procedure.

For several years the writer has carried on an experiment in "pupil progress" in track athletics with a view to determining the average amount of improvement which could be expected in class work of this sort. Track agility, as the class work is called, is a semester course of two hours per week and is taken by men who are found deficient in this phase of agility. Since the actual period of instruction and practice is but 30 minutes in length, the instructor can count on not more than 15 hours of actual participation during the semester, allowing for inclement weather and the measurement period.

The class (maximum number 48) is organized into squads of 12 men each and this organization maintains throughout the semester. Twelve individuals is the number empirically determined as best for purposes of instruction and for practicability in the use of equipment. The group of track and field events selected include the 100 yd. dash, 120 yd. low hurdles, half-mile run, running broad jump, 12 lb. shot put and discus throw. After several years of experimentation with various combinations of events, and with consideration for the time element, the six events listed have seemed to be most useful in the development of agility in track and field work.

Three periods are set aside at the beginning of the semester and with the help of student leaders a record of each man in each event is obtained. Tests in two events are completed each day. The instructor does all the timing, but students are so organized that they take their own measurements in other events, reporting them to the squad leader. The combination of events for each squad during a given period is different so that each individual is able to obtain the maximum number of trials during the fifteen minutes in which he is engaged on a particular event. His best score is recorded. Shot

put and discus circles are provided, six pairs of each, and implements and tapes for each pair of circles. The same procedure is followed in the testing period at the end of the semester.

Between these two testing periods the time is devoted exclusively to practice and instruction. After a preliminary lecture on each event the instructor goes from group to group emphasizing form. It has been found most practical to assign only one event to a squad each day and rotate events, reserving the last 5 to 7 minutes of the period for practice and instruction in distance running.

The accompanying table will indicate the average or mean improvement in each event. As a correlary to the study, the total group was divided into three classes according to height and three classes according to weight. The mean improvement for each of these classes is also shown.¹ Approximately 400 cases were used in the study.

MEAN IMPROVEMENT IN TRACK AGILITY EVENTS

College Men, University of California at Los Angeles

	100 yd. Dash Seconds	120 yd. low Hurdles Seconds	Half Mile Run Seconds	Running Broad Jump Inches	12 Lb. Shot Put Inches	Discus Throw Feet
Total Group .....	.435	1.025	12.30	16.36	22.17	13.39
Height Tall .....	.446	1.002	11.59	16.34	20.39	13.73
Classes Medium .....	.444	1.097	12.43	17.13	24.70	13.53
" Short .....	.404	.873	12.82	14.76	18.48	12.57
Weight Heavy .....	.377	1.096	12.50	16.69	24.06	12.97
Classes Medium .....	.469	.968	11.22	15.45	22.14	13.39
" Slender .....	.402	1.099	14.62	19.0	20.50	13.75
Mean Before Practice and Instruction	12.6	17.4	2.47	14.2	28.0	60.0
Percentage of Improvement after 2 1-2 hours of practice and instruction..	3.5	5.9	7.4	9.6	6.6	22.3

CONCLUSIONS

1. The percentage of improvement of college men at the University of California at Los Angeles in track and field events varies between 3.5 and 9.6 per cent in all events except the discus throw. The high percentage of improvement in this event is probably due to the fact that very few men have ever had a discus in their hands before entering college.

2. There are no differences in the height or weight classes large enough to be significant in showing that one class improves more than another. By significant is meant that the D (actual difference) divided by its standard error is greater than 3. It is interesting to note, however, that the short group is the low improvement group in each event except the half-mile run.

3. The slender group, according to the figures in the table, has the better of the heavy group in every event except the shot put, where manipulation of a 12-pound ball is apparently a serious handicap. Upon further study this may point to a conclusion that the lack of weight makes one more adaptable to a physical activity environment. The data of this study are insufficient for such a conclusion.

¹ For a discussion of this height-weight division see Cozens, F. W., A Study of Stature in Relation to Physical Performance, in the Research Quarterly of the A. P. E. A., March, 1930.

The Physical Condition of Certain College Students

L. C. PRESSEY, H. C. MARTIN, and H. D. BEHRENS

Department of Psychology, Ohio State University

I. *Nature of the Investigation.* During the Winter Quarter of 1930 one of the writers was in charge of two classes, one for students on probation and one for students interested in mental hygiene. The first group was composed exclusively of freshmen and the other largely of freshmen and sophomores. Both groups were somewhat special in character. The probation students were obviously in academic difficulty and those who had elected the mental hygiene course had done so, in large measure, because they had problems concerning which they needed help. There were 224 students in the two groups.

One of the basic sources of difficulty either in academic work or in personal adjustments is, of course, inadequate health. It seemed, therefore, that the question of physical condition should be investigated for all these students with an idea of starting any needed treatment as soon as possible. As a first step, a questionnaire concerning certain background conditions was formulated. The questions included were designed primarily to reveal chronic conditions such as possible focal infections, digestive inefficiencies and certain glandular disorders. All the probation students and about two-thirds of those in the mental hygiene class were given personal interviews during which the interviewer made reference to the items marked on the questionnaire and made every effort to gather any further information concerning physical condition. On the basis of both the questions and the interviews over 100 of these students were sent to the Medical Service for an examination, which in about 95% of the cases showed the questionnaire results to be of high reliability. There would appear, then, no reason to suppose that the situation revealed by using the results from the entire 224 students would not be of similar reliability. It should be noticed in this connection that the questions are objective and detailed so that the answers are more likely to be accurate than is the case with questions of a more general nature. Of course, the results revealed concern students who are in more or less serious difficulty and may not be typical of successful students. The results are, however, of interest, especially since they show the prevalence of certain chronic conditions that all too often escape notice but that interfere with adjustment to college demands to a far greater extent than most people realize. A loss of 10% of

one's efficiency day after day because of a chronic physical condition (such as, hypo-thyroidism) is probably more important academically than the loss of 100% for a month because of a broken leg. The situation revealed should prove of interest to anyone dealing with college students.

II. *The Nature of the Results.* The actual questions used are shown, together with the percent of the 224 students marking each response. The answers in the first column are the negative ones; the farther out to the right the other answers are, the more significant they become. One convenience of this questionnaire is the ease of scoring it. One simply covers the first column with a ruler and then marks anything that still shows. The number of such marks on a paper is a rough indication of the degree of physical handicap.*

Table I: Showing the Questions Asked, the Possible Answers and the Per Cent of Students Marking Each Answer.

DIRECTIONS: Please answer each of the following questions by drawing a line around the appropriate answer. If no answer seems appropriate, please write in one that is. Take as much time as you need and answer as accurately as you can.

	Percent marking each answer							
	0	1	2	3	4	5	5+	
1. How many colds have you had during the past year?	% 9	29	23	17	10	11	1	
2. Do you have a slight cold continually?	No % 78	Yes 22						
3. Do you have a cough continually?	No % 90	Yes 10						
4. How many times in the last year have you had tonsilitis?	0 % 82	1 11	2 3	3 1	4 1	5 2	5+ 0	
5. How many attacks of rheumatism have you had?	0 % 91	1 7	2 1	3 1	4	5	5+	
6. Do you often have rheumatic pains in your joints?	No % 91	Yes 9						
7. How many times have you had an infection in your ears?	0 % 80	1 10	2 4	3 3	4 1	5 2	5+ 0	
8. Do you have a regular discharge from your ears?	No % 91	Yes 9						
9. Have you ever had a mastoid?	No % 94	Yes 6						
10. How many dead teeth do you have?	0 % 71	1 14	2 10	3 2	4 1	5 2	5+ 0	
11. How many times have you had a sinus infection?	0 % 87	1 9	2 2	3 1	4	5 1	5+ 0	
12. When you have a cold do you have severe pain over your eyes?	No % 80	Yes 20						
13. When you have a cold do you have severe pains in your face?	No % 91	Yes 9						

* This statement is not quite true because some symptoms are so much more important than others. Thus, a positive answer to Question 42 might be more significant than a half a dozen other positive responses. In general, however, the above statement holds true.

14. When you have a cold do you have severe pains in your ears?	No % 87	Yes 13							
15. How many attacks of appendicitis have you had?	0 % 88	1 6	2 4	3 2	4	5	5+		
16. Have the attacks ever been severe?	No % 92	Yes 8							
17. Has your appendix been removed?	No % 97	Yes 3							
18. Have you ever had tuberculosis?	No % 98	Yes 2							
19. Have you ever had to drop your work because you were in danger of having it?	No % 96	Yes 4							
20. How often do you have asthma?	never % 93	rarely 2	often 2	very often 3					
21. How often do you have hay-fever?	never % 87	rarely 8	often 3	very-often 2					
22. How many times during the past year have you had to stop work because of indigestion?	0 % 79	1 9	2 5	3 3	4 2	5 2	5+ 2		
23. How often do you have pain or burning in your stomach?	never % 85	rarely 4	often 6	very often 5					
24. How often do you have cramps in your intestines?	never % 63	rarely 33	often 2	very often 2					
25. About how many times a week do your bowels move? (If they move once each day, the answer is 7; if they fail to move some days, the answer is less than 7; if they move more than once a day the answer is more than 7. Be as accurate as possible.)	3 % 2	4 2	5 10	6 50	7 8	8 6	9 8	10 2	11 1
26. How many days a week do you usually miss one of your meals?	0 % 51	1 16	2 10	3 9	4 2	5 2	5+ 10		
27. How many days a week do you usually eat between meals?	0 % 29	1 10	2 19	3 16	4 5	5 15	5+ 6		
28. During the last six months have you been gaining weight?	No % 48	Yes 52							
29. During the last six months have you been losing weight?	No % 85	Yes 15							
30. How often do you have headaches?	never % 21	rarely 66	often 13	very often					
31. Are your headaches usually severe enough to make you stop work?	No % 66	Yes 34							
32. Do you feel constantly tired?	No % 78	Yes 22							
33. Do you feel tired when you wake up in the morning?	No % 56	Yes 44							
34. Do you faint easily?	No % 87	Yes 13							
35. How many times have you fainted this last year?	0 % 88	1 5	2 4	3 1	4 1	5 2	5+ 2		
36. Have you ever had a goitre?	No % 94	Yes 6							

37. Do you have a slight enlargement in your throat?	No % 78	Yes 22
38. Do you laugh and cry more easily than other people?	No % 84	Yes 16
39. Do you often feel your heart hammering in your head or throat?	No % 82	Yes 18
40. About how many minutes do you usually lie awake after you go to bed?	0-14 % 49	15-30 31
	31-45 5	46-60 6
	61-90 3	91-120 2
	121+ 4	
41. How many minutes too early do you usually wake up?	0-14 % 78	15-30 14
	31-45 7	46-60 1
42. Have you ever been told your heart was abnormal in any way?	No % 94	Yes 6
43. Have you ever had a hernia?	No % 97	Yes 3
44. (Girls only) Are your menstrual periods severe enough to make you lose one or more days of school?	No % 81	Yes 19
45. Are you usually nauseated during your periods?	No % 92	Yes 8

It should be noticed that the first 17 questions deal with matters that might suggest the presence of infection. Items 22-29 concern symptoms of digestive disorders. Numbers 34-39 are concerned with thyroid conditions. It has repeatedly been found possible to anticipate the findings of the physical examination by observing the grouping of the responses on this questionnaire.

III. *The Significance of These Results.* The above results need little comment. The writer would guess that about 15 per cent of these students had a focal infection of some sort. (The significant replies run from approximately 10 to 20 per cent for the questions referring to symptoms of such conditions.) A similar number of these students have made replies indicating digestive malfunctioning. The per cents showing possible thyroid involvement run with surprising consistency between approximately 15 and 20. There seems to be, as a result of various conditions, altogether too much fatigue and too many headaches, especially in view of the youthfulness of those who made these answers. When one turns to what the uninitiated would term "serious" conditions, however, one finds little to get worried about (mastoid 6 per cent, asthma 5 per cent, tuberculosis 2 per cent, goitre 6 per cent, hernia 3 per cent), but the writer would like to reiterate that these severe conditions are not the ones that result most frequently in the peculiarities of emotional response and the inefficiencies of working methods that get students into academic difficulties.

In closing, a few suggestions should be made as to what might constructively decrease the numbers of students whose vitality is

being sapped by chronic conditions most of which are remediable. In practically any institution, there is a physical examination at entrance the chief function of which seems to be the classification of students in gymnasium classes of various types. This same examination* could be so carried on as to obtain information on the various conditions that might hamper progress in college. There should be, also, a second examination at about the beginning of the junior year to identify those students for whom college work has been too great a strain. The writer has known a considerable number of students who developed or at least markedly accentuated their difficulties as a direct result of a hectic freshman year; obviously, no entrance examination will locate these individuals. Finally, there can be a kindly but persistent following up of students on the basis of these examinations to see to it that the conditions thus revealed are remedied. Any institution that will take the trouble to work out such a program constructively should be able to make an appreciable change in the situation within a single generation of college students.

* For such an examination, however, one needs doctors especially trained to look for particular kinds of symptoms and different types of inquiry blanks from those customarily used.

Intramurals and the Women's Athletic Association

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This article presents the results of a study made on the subject of Intramurals for women as conducted at present in colleges and universities. Questionnaires were sent to the Directors of Departments of Physical Education for Women in 47 colleges and universities. These schools are listed at the end of the article.

Some changes may have occurred in the programs or financial arrangements of the schools since then. It seems safe to presume, however, that the majority of the facts are still representative of the prevailing conditions.

First, I want to discuss the problem of financing Intramurals for Women in Colleges and Universities. In only 5 of the schools studied was any financial aid received from the men's inter-collegiate athletic funds, and even those amounts varied greatly. The University of Michigan Department of Physical Education for Women obtains the whole of their departmental budget from this source. The University of Southern California had \$900 in 1928-29 which was to be enlarged to \$1200 in 1929-30. The University of Colorado obtains \$75 for intramurals from the Women's Athletic Association which gets its budget from the inter-collegiate athletic fund. Ohio University usually has nothing from this source but in 1928-29 had \$50, and the Kansas State Agricultural College is given \$25 for an Intramural Cup.

In 10 schools the Department of Physical Education for Women bears the whole of the intramural expense, except in some cases such extra expenses as spreads, cups, numerals, and individual fees for bowling tournaments held in public bowling alleys.

In others the Department bears part of the expense, meaning that it furnishes all the equipment and pays the staff salaries of those instructors who spend all or part of their time with intramural activities. Most of these colleges did not know exactly what per cent of the total expense this would amount to, but one thought it might be 20%, another 25%, and at the University of Wisconsin the Department bears about 66% of the total expense of intramurals. Five schools said that the Department bears none of the expense, although I imagine this means exclusive of staff salaries and use of equipment.

Where the Department bears part or none of the expense, there

are various other sources of revenue. Some receive financial aid from inter-collegiate athletics as already stated, three schools receive a certain amount from the student activity fund, and the rest have an entrance fee for teams or else the girls raise their own money. In only three colleges where the girls earn all or part of their own expense money do they also have an entrance fee for teams. In every other case it is one or the other.

The next problem is, what is a satisfactory budget for intramural activities. It is comparatively easy to compute the added expense of intramurals to a Department due to extra staff members or the per cent of the total teaching hours any number of staff members may devote to intramural organization, but it is much harder to determine just what per cent of the total amount spent on equipment in any one year would have been spent anyway if an intramural program had not been offered. The amount necessary to spend on advertising, pre-season propaganda to arouse interest, letters or postals informing teams of tournament schedules and so on, will vary with the local conditions in each college or university. But there must be a certain minimum amount which should be spent for this purpose in order to obtain the most desirable results.

It is difficult for me to give exact figures on these points because I do not know in most cases whether the total cost of the intramural program as stated in the returned questionnaires included staff salaries and equipment or not. In four cases the only extra expense of intramurals was for trophies or loving cups given the winners of the activities. One stated this amount as \$50 and another as only \$20.

I have taken the figures from those colleges where I thought the amounts given did not include staff salaries and computed the cost per individual. Out of 18 different colleges which are satisfied with their intramural budget, 11 spend from thirteen cents per individual to \$4, the average being about 89 cents. Five others spend from 8 cents to \$2.25 (the average being about \$1.14) and are not satisfied. Two other colleges spend 8 cents and \$1.90 respectively and did not say whether they were satisfied or not. It would seem from these figures that a budget of from \$1.00 to \$1.50 per individual participating in intramurals should be satisfactory, this figure exclusive of staff salaries of course.

The third problem is to find out what units within the college or university should be used for intramural competition in sports. We hope through our intramural activities to help girls to establish habits of physical recreation, and to give them opportunities of becoming acquainted with girls other than those in their own sororities, classes, or dormitories and under conditions which tend to produce natural, spontaneous friendships. By doing this we may at the same time, if we carefully choose the units we use as a basis for compe-

tition, help to relieve the feeling of bitter rivalry which often exists between sororities and the feeling which some sorority girls have of their superiority over the non-sorority girl.

I found that 28 colleges or universities have both *inter-group* competition, meaning groups already organized for other purposes such as sororities, dormitories, rooming houses and so on, and *inter-class* competition, meaning between freshmen, sophomores, juniors and seniors. Two have inter-group competition alone and five have inter-class competition alone.

The relative popularity of these two units differs very much in the various colleges, 15 finding inter-group arouses more interest, four finding inter-class of greater interest, while seven find both units to be of almost equal popularity. Outside of one college which has only 100 women students enrolled, the others studied have an enrollment of from 400 to 3500 women students. There seems to be little or no correlation between the amount of this enrollment and the relative popularity of competition based upon these two unit divisions, inter-class and inter-group.

The University of Cincinnati has a rather unique plan based on the League of Nations. They have six leagues, and every freshman at registration time is assigned to a league regardless of club or sorority affiliation. All activities are inter-league and, if I understand the plan correctly, each girl belongs to the same league all her four years in college. They have found that this plan successfully eliminates the sorority, non-sorority complex and yet gives each girl a group to which to be loyal.

The ideal plan would be to have entirely different units for competition for each sport, but here we would find difficulty in arousing the interest of the girls. So many girls are urged by others to come out to show their loyalty to the group and then find after they have played that they are interested in the sport itself. Why cannot we transfer this enthusiasm, after it is aroused through these more natural channels, into competition between teams where sophomores, juniors and other classes are all mixed up regardless of other affiliations?

The fourth problem is as follows: Are team sports or individual sports more popular? Basketball seems to lead the list in popularity, 24 colleges finding that it draws a greater number of girls into participation than other sports. This sport has a total of votes twice as high as any other sport. Then listed in the order of school preference for popularity comes swimming in 10 colleges, hockey in 8, baseball in 6, track in 3, rifle marksmanship in 2, and archery, golf-putting, camp craft, tumbling, natural dancing, and Nebraska-ball, which is an adapted form of cage ball, one each in various schools. From this we conclude that except for basketball, team and individual

sports are of almost equal popularity, the difference being due to the sport itself and not to the fact that it can be classified as individual or team.

How much coaching or teaching should be given the teams and who should do this coaching? This is the next problem in our study. In several colleges no coaching is given the teams except the training the individuals get in their regular physical education classes and of course this will carry over into intramurals. In other schools, all of the coaching is done by the major students in physical education, especially those in the sports' technique courses. In some the faculty do the coaching while the majors referee or vice versa, and in others the faculty do it all. In several cases the students coach the teams for the inter-group tournaments, and the faculty coach the inter-class teams.

At Western State Normal College and the University of Southern California each faculty member sponsors one sport. At the University of Cincinnati all teams are coached by the faculty and I imagine each staff member coaches the teams within the league she is sponsoring. At the University of Michigan all teams in every sport are requested to have at least one practice at which time coaching is provided. For individual sports the teaching is given certain days a week during practices before a tournament. In addition, the house managers and team captains do some coaching on their own initiative. At the Florida State College all teams have a student coach, and much additional coaching is given by the faculty, but even so they feel that this is not sufficient.

From this it seems that the majority opinion is that we should provide as much coaching as it is possible for us to do under the present circumstances, and to have this coaching as expert as can be obtained; also to use faculty members first, major students in physical education second, and untrained student coaches last.

Our next question concerns the matter of officials at tournament games. Wherever there is a major department in physical education it seems to be the policy to have the major students act as officials at the games. Up to the semi-finals the majors or minors taking the technique of sports' courses act as officials; but at the semi-finals and finals the instructors officiate wherever possible, using major students who have completed their technique courses to fill in whenever necessary. In a few cases the majors do all the officiating but usually under the supervision of an instructor (especially at the finals) who takes official part in the game only in case of dispute or accident. In one or two cases the physical education faculty act as officials at all games even though the school has a major department. Of course where no major department exists, the faculty necessarily

act as officials for all games unless staff members or majors from nearby colleges can be secured.

The last topic I am going to discuss is: What is the relation of intramurals to the Women's Athletic Association? In all but two of the colleges studied they are in some way related. Those exceptions are Michigan State College, where the two are entirely separate, and the University of Chicago, where all activities are a part of the regular departmental work. At Indiana University the two are related but the intramural activities and meetings are conducted separately even though the Women's Athletic Association is always informed of the plans. In most cases, however, the intramural activities are sponsored by the Women's Athletic Association. This sponsorship may mean that the W.A.A. elects the heads of all the intramural sports, or that one or two girls are either elected or appointed to take charge of all intramural activities.

On the other hand, at several schools the intramurals elect their own student head and she is allowed to sit on the W.A.A. Council. At the University of Michigan there is an entirely separate Intramural Board whose chairman is a member of the W.A.A. Board. At the University of Cincinnati intramurals are within the W.A.A. and controlled by it.

From this it seems that in most cases intramurals are recognized as a part of the Women's Athletic Association activities but as a separate unit from its other activities.

Up until the spring of 1929 the University of Nebraska had two separate organizations, the intramural organization sponsoring the inter-group tournament games and the Women's Athletic Association the inter-class games. At that time these groups decided that it would be to the mutual advantage of both to consolidate and reorganize under one association. From an administrative standpoint, the Department of Physical Education for Women also favored the change. So after a year's experimentation very definite plans have been worked out for an organization which is sponsoring and controlling all extra-curricular athletics and sports for women.

This organization is known as the Women's Athletic Association with an active membership including every undergraduate and graduate woman of the University who is interested in athletics. No membership dues or other obligations are required.

Following is a brief outline of this plan of organization:

I. Officers

1. President
2. Vice-president
3. Secretary
4. Treasurer

II. Executive Council

A. Members

1. President of the Association, Chairman
2. Other officers of the Association
3. Concession manager
4. Publicity manager
5. Social Chairman
6. Expansion director
7. Any officer of A.C.A.C.W.
8. Ex-officio members:
 - a. Director of Department of Physical Education for Women
 - b. Faculty sponsors of W.A.A.

B. Duties (briefly)

1. Meets once a week and has power of final decisions on all administrative matters

III. Sports Board

A. Members

1. Heads of Sports appointed by executive council.

B. Duties

1. Notify all group intramural representatives of group practices and games
2. See that all necessary equipment is on hand for all match games
3. Cooperate with the advisor in:
 - a. Securing officials
 - b. Advertising her sport practices and match games.

No individual points are kept and the present basis of awarding individual honors is as follows:

IV. Basis of awarding "N"*

1. Interest in association and its program
2. Scholarship, that is eighty per cent for all years in university and a clear record now standing
3. Character
4. Two and one-half years in college or university
5. Shall have attended the University of Nebraska for at least one year
6. A committee of all "N" girls and one faculty sponsor, shall investigate the eligibility of candidate and make a report to the executive council which shall make the final decision

V. Basis of awarding a numeral

1. Interest in the association and its program
2. Scholarship (same as for "N")
3. Character
4. One year in college or university
5. At least one semester in the University of Nebraska.

Group points are kept very carefully. An award is given to the group winning the tournament in each different sport. In addition a final award is given to the group having entered the greatest number of sports, and having the largest per cent of girls active in sports throughout the year.

The problem of the participation of majors in physical education

* NOTE—The individual award has gradually ceased to be a problem for discussion—so far this year no mention has been made of possible candidates, and we believe, as we had hoped would happen, it is gradually being forgotten, even by our majors who were most opposed to abolishing it. We are about to believe the individual award is a thing of the past.

in the intramural program seems to be a difficult one for most schools. At Nebraska we have no separate "major" competition. Those majors who belong to organized groups play with these groups and only one major is allowed to play on each team. Those majors who are interested but belong to no organized group are urged to organize independent teams. At present we have 31 active intramural groups composed of social and church sororities, and dormitory and independent groups.

APPENDIX I

The following figures show the growth in interest during the last few years in extra-curricular athletic activities among the women students at the University of Nebraska. This interest is more spontaneous and enthusiastic since the new plan of organization has been in effect. Contrary to the old idea of having to *prove* her athletic ability or interest by earning a certain number of points before being allowed the privilege of active membership, every girl in school is now considered an active member.

Number of girls participating in Intramurals

*By activities :	1926-27	1927-28	1928-29	1929-30	1930-31 First sem.
Archery			24	124	
Baseball	132	220	230	266	
Basketball	70	60	280	258	
Bowling		48	180	200	392
Dancing	27	44	80 (est.)	50	
(Orchesis only)					
Deck Tennis			98	76	
Golf				20	
Hockey	62	64	78	40	
Nebr. Ball			317	327	382
Paddle Tennis				106	258
Rifle Firing	90	100	105	186	
Tennis	81	123	134	132	
Soccer	64	83		30	
Speedball				230	290
Swimming			80	125	
Track and Field			24		
Volley Ball	61	50	Nebraska Ball took its place		
Number activities offered	10	17	17	16	
Total number girls	796	1215	1870	2196	
Number <i>different</i> girls	146	400 (est.)	623	900	

* This list of activities is not complete, but representative.

APPENDIX II

Statistics were gathered from questionnaires sent to the Directors of Departments of Physical Education for Women in 47 colleges and universities—36 to those whose Directors are members of the Mid-West Association of Directors and 11 more to representative colleges in other sections.

Answers were received from the following 37 colleges in the following 17 states:

California—University of Southern California; Leland Stanford University.

Colorado—University of Colorado; Colorado Agricultural College; University of Denver; Colorado College.

Florida—Florida State College.

Illinois—University of Chicago; Northwestern University; University of Illinois.

Indiana—Purdue University; De Pauw University; Indiana University; Earlham College.

Iowa—State University of Iowa; Des Moines University; Iowa State College; Simpson College.

Kansas—Kansas State Agricultural College.

Massachusetts—Boston University.

Michigan—University of Michigan; Western State Normal College; Michigan State College.

Missouri—University of Missouri; Washington University.

Nebraska—University of Nebraska.

New York—Syracuse University.

Ohio—Miami University; Oberlin College; Ohio University; University of Cincinnati; Ohio Wesleyan University; Western Reserve College for Women.

Oregon—Oregon State Agricultural College.

Texas—University of Texas.

Washington—University of Washington.

Wisconsin—University of Wisconsin.

After College What?

A Study of the Physical Recreational Activities of Some Stephens College Graduates

BY WILMA D. HAYNES

Director of Physical Education, Columbia, Miss.

AFTER college what? This question has been in my mind for a number of years as I have observed college graduates in their professional and home surroundings. What sport activities carry on after the required work of physical education in college has been finished? What habits for physical recreational activities have been implanted in the lives of our average college student?

The problem of leisure time is today one of the outstanding questions of our social world. The manner of present-day living with its automobile, its movies, and its development of an urban civilization, has all tended to take away from the average boy or girl in school life a love of play for the sake of having a good time. Many students on reaching college do not participate in many recreational activities other than dances or movies. Now and then they do have a game of tennis, golf, or an afternoon of swimming, but even these activities are not a real part of their entire lives.

It is true that there are many activities being taught in our college physical education programs which do not necessarily have a great leisure time carry-over value. Such highly organized sports as hockey, soccer, basketball, and baseball are all valuable for the development of big group muscles of the growing girls. At the same time it is important for us to add to our program, activities which can be enjoyed by individuals either singly or in groups of two, three, or four, with the additional merit of being enjoyable at any age. In the future, the youth who is not trained to participate in some form of physical recreational activity that is not highly organized will be named a social wall flower.

After reviewing the foregoing statements, an attempt was made at Stephens College to find out what recreational activities were participated in by graduates and what activities we might teach in college that would help them in their after-school life.

In order to get at this problem it was decided to send out questionnaires to forty students from each of the classes of the past ten years. The names were selected at random. Ninety questionnaires were returned. These gave enough information to stimulate thinking

along lines of leisure time needs for the college graduate. Our conclusions cannot be definite but certainly the tendencies are shown.

The questions are as follows:

1. Were you interested in any physical education activity before you came to college? What ones?
2. What physical activity did you enjoy while in college?
3. Now that you are out of college what physical activity are you enjoying?
 - a. In particular I should like to know if you are participating in
 1. Golf
 2. Swimming
 3. Tennis
 4. Horseback riding
4. If you do not use the following is it because you do not have the facilities in your community?
 1. Golf
 2. Swimming
 3. Tennis
 4. Horseback riding
 5. Hunting
5. Do you feel the need of some form of physical recreation activity to help you to relax after the cares of Home or Business?
6. What do you think could have been appropriately taught while you were in school that would have helped you to solve your leisure time problem?

The four most frequently mentioned activities which women think would have helped them had the activities been taught while they were in school, were golf, tennis, walking, and swimming. These four activities were also included among those most frequently mentioned as the kind they could do to help themselves along physical recreational lines.

ACTIVITIES WHICH WERE MOST ENJOYED BY STEPHENS GRADUATES AFTER COLLEGE

Activities	Percent Participating		
	Before College	During College	After College
Swimming	22.0%	25.2%	22.6%
Walking	0.9%	0.4%	14.5%
Golf	3.0%	0.4%	13.3%
Hiking	7.0%	9.8%	11.0%
Tennis	19.0%	12.4%	10.4%
Dancing	3.6%	6.8%	5.8%
Totals	55.5%	54.8%	77.6%

When the different physical activities are ranked according to their popularity, there is a correlation of .80 between the ranking given them at the time of the questionnaire and the ranking during college days. A correlation of 1.00 would have been perfect. By the above method the correlation between the physical activities participated in before college and the activities they were now enjoying was .46.

ACTIVITIES WHICH INCREASED IN POPULARITY FOR STEPHENS GRADUATES AFTER COLLEGE

Activities	Percent Participating		
	Before College	During College	After College
Hikes	9.8%	7.0%	11.0%
Golf	0.4%	3.0%	13.3%
Hunting	2.0%	0.0%	3.4%
Totals	12.2%	10.0%	27.7%

The activities which increased in popularity and were more popular before and after college, were hiking, golf, hunting and walking.

Fishing, hunting and rowing were enjoyed before girls entered college and were also enjoyed after they left college.

ACTIVITIES WHICH WERE NOT ENJOYED BY STEPHENS GRADUATES IN COLLEGE BUT WERE ENJOYED BEFORE AND AFTER COLLEGE

Activity	Percent Enjoying the Activity		
	Before College	During College	After College
Fishing	0.9%	0.0%	0.6%
Hunting	2.0%	0.0%	3.4%
Rowing	0.9%	0.0%	0.6%
Totals	3.8%	0.0%	4.6%

Gymnastic work and track were enjoyed in college but not after the students left college.

ACTIVITIES WHICH STEPHENS GRADUATES ENJOYED MORE IN COLLEGE THAN AT ANY OTHER TIME

Activity	Percent Enjoying the Activity		
	Before College	During College	After College
Gym. Work	0.0%	7.3%	0.0%
Track Work	1.0%	1.7%	0.0%
Soccer	0.0%	1.7%	0.6%
Field Ball	0.0%	3.0%	0.0%
Plays and Games	0.4%	0.4%	0.0%
Totals	1.4%	14.1%	.6%

Partly as a result of the study, golf was added to the physical education curriculum. Swimming and tennis, of course, have always been a part of the program. The golf enrollment increases each year as does swimming, tennis, and horseback riding. A more thorough study of *before* and *after* college activity is now being made by us. If we can judge by the tendencies shown in this preliminary study, it seems as if leisure time activities should be emphasized more and more in our regular physical education department work.

If we wish to develop our students so that they will possess personalities that are happy, wholesome and socially adjusted, then we must help them in this problem of leisure time.

A Curriculum for the Professional Preparation of Physical Education Teachers for Secondary Schools

N. P. NEILSON

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PROFESSIONAL Courses for the preparation of Physical Education teachers are now given in a large number of universities, colleges, teachers' colleges, state normal schools, junior colleges and in special schools of Physical Education. The rapid growth in the number of institutions giving these professional courses is an indication of the attempt to meet the growing demand for teachers of Physical Education.

State certification to teach should follow automatically upon the student's completion of the curriculum required by the state and institution for professional preparation. California adopted new certification requirements in 1928 and this raised the question of harmonizing the state's plan with the teacher-training plans of the various institutions of the state.

Early in 1928 the writer made a study of the courses listed in twenty-eight college catalogs* as given and recommended for the preparation of Physical Education teachers. The course names were written on cards, which were arranged in alphabetical order, thus revealing the astonishing fact that there were 671 differently named courses. The course names follow:

1. Active Participation in Athletics.
2. Activities and Methods for Play and Recreation Leaders.
3. Activities for Primary and Elementary Grades.
4. Adaptation of Activities in Corrective Procedures.
5. Administration and Organization of Physical Education.
6. Administration and Supervision.
7. Administration of California State Program of Physical Education.
8. Administration of Corrective Work.
9. Administration of Health Service and Health Education.
10. Administration of Physical Education.
11. Administration of Physical Education and Athletics.
12. Administration of Physical Education Department.
13. Administration of Physical Education in Elementary and Junior High Schools.
14. Administration of Physical Education in Schools and Play Centers.
15. Administration of Physical Education in Secondary Schools.
16. Administration of Physical Education Programs, Including Equipment and Management.
17. Advanced Activities.
18. Advanced Archery.
19. Advanced Baseball.
20. Advanced Baseball Methods.
21. Advanced Basketball.
22. Advanced Basketball Methods.
23. Advanced Boxing.
24. Advanced Boy Scout Training Course.
25. Advanced Chemistry.
26. Advanced Dancing, Theory and Practice.
27. Advanced Diving.
28. Advanced Fencing.
29. Advanced Folk and National Dances.
30. Advanced Folk Dancing.
31. Advanced Football.

*Thirteen were from California institutions and the others distributed fairly well over the United States.

32. Advanced Football Methods.
33. Advanced Formal Gymnastics.
34. Advanced French.
35. Advanced German.
36. Advanced Gymnastics.
37. Advanced Gymnastics and Apparatus Work.
38. Advanced Gymnastics and Sports Practice.
39. Advanced Individual Gymnastics.
40. Advanced Handball.
41. Advanced Interpretive Dancing.
42. Advanced Kinesiology.
43. Advanced Methods in Physical Education.
44. Advanced Natural Dancing.
45. Advanced Physical Education.
46. Advanced Physiology of Activity.
47. Advanced Rugby Football.
48. Advanced Soccer Football.
49. Advanced Swimming.
50. Advanced Swimming and Methods of Teaching Swimming.
51. Advanced Tennis.
52. Advanced Theory of Remedial and Corrective Gymnastics.
53. Advanced Track and Field.
54. Advanced Track and Field Methods.
55. Advanced Wrestling.
56. Aesthetic Dancing.
57. Aid to the Injured.
58. American Football.
59. American Government.
60. American Government for Teachers.
61. American History for Teachers.
62. Anatomy.
63. Anatomy and Kinesiology.
64. Antagonistic Exercises.
65. Anthropology.
66. Anthropometry.
67. Apparatus Exercises.
68. Apparatus Pedagogy.
69. Applied Anatomy.
70. Applied Anatomy and Kinesiology.
71. Applied Anatomy and Physiology of Exercise.
72. Applied Methods in Formal Activities.
73. Applied Methods in Play Activities.
74. Applied Physical Education and Hygiene.
75. Applied Physiology.
76. Archery.
77. Athletic Activities.
78. Athletic Coaching.
79. Athletic Coaching and Directing.
80. Athletic Games.
81. Athletic Supervision.
82. Athletics.
83. Athletics and Games.
84. Athletics for Women.
85. Bacteriology.
86. Bag Punching.
87. Baseball.
88. Baseball and Track.
89. Baseball Coaching.
90. Baseball Officiating and Management.
91. Basic Principles of Physical Education.
92. Basketball.
93. Basketball Coaching.
94. Basketball Coaching Practice.
95. Basketball Officiating.
96. Biology.
97. Biology of Protoplasm.
98. Botany.
99. Boxing.
100. Boxing and Wrestling.
101. Business Administration.
102. Calisthenic and Dancing Pedagogy.
103. Calisthenics and Drill Practice.
104. Camp Craft.
105. Canoeing.
106. Care of Dependents.
107. Care of Student Health.
108. Character Dancing.
109. Character Dancing and Clogging.
110. Character Education Through Play or Physical Education Activities.
111. Chemistry.
112. Chemistry of Nutrition.
113. Child Hygiene.
114. Classical Dancing.
115. Class Organization and Management.
116. Class Procedure in Physical Training Activities.
117. Classroom Management.
118. Clinic for Restricted Students.
119. Clinical Psychology.
120. Clog Dancing.
121. Clogging and Tumbling.
122. Club Organization and Scouting.
123. Coaching.
124. Coaching Athletic Activities.
125. Coaching Athletics.
126. Coaching of American Football.
127. Coaching of Baseball.
128. Coaching of Basketball.
129. Coaching of Track and Field Events.
130. College Mathematics.
131. Combative Sports.
132. Community Hygiene.
133. Community Organization.
134. Community Recreation.
135. Community Service Through Girls' Organizations.
136. Comparative Anatomy of the Vertebræ.
137. Competitive Swimming.
138. Composition and Rhetoric.
139. Composition for Teachers.
140. Control of Poverty.
141. Corrective Exercise.
142. Corrective Gymnastics.
143. Corrective Gymnastics and Massage.
144. Crew.
145. Cross Country.
146. Current Problems in Physical Education.
147. Dance Technique.
148. Dancing.
149. Dancing Composition.
150. Developmental Activities.
151. Developmental Athletic Activities for Women and Girls.
152. Developmental Athletics for Girls.
153. Directed Teaching and Observation of Physical Education Activities.
154. Directed Teaching in Physical Education.
155. Diseases of Children.
156. Drama.
157. Dramatic Arts, Plays, Games and Dances of Early Childhood.
158. Dramatic Expression in Physical Education.
159. Dramatic Games.
160. Economic History of the United States.
161. Education for Citizenship.
162. Educational Aspects of Dancing.
163. Educational Athletics for Men and Boys.
164. Educational Hygiene.
165. Educational Measurements.
166. Educational Psychology.
167. Educational Sociology.
168. Educational Statistics.
169. Elementary Activities.
170. Elementary Archery.
171. Elementary Baseball.
172. Elementary Baseball Methods.
173. Elementary Basketball.
174. Elementary Basketball Methods.

175. Elementary Boxing.
176. Elementary Boy Scout Training Course.
177. Elementary Chemistry.
178. Elementary Course in Basketball.
179. Elementary Dancing.
180. Elementary Danish Gymnastics.
181. Elementary Diving.
182. Elementary Economics.
183. Elementary Epidemiology.
184. Elementary Fencing.
185. Elementary Folk Dancing.
186. Elementary Football.
187. Elementary Football Methods.
188. Elementary Formal Gymnastics.
189. Elementary French.
190. Elementary German.
191. Elementary Golf.
192. Elementary Gymnastics.
193. Elementary Gym and Sports.
194. Elementary Handball.
195. Elementary Interpretative Dancing.
196. Elementary Natural Dancing.
197. Elementary Organic Chemistry.
198. Elementary Physical Education.
199. Elementary Physics.
200. Elementary Physiology.
201. Elementary Psychotherapy.
202. Elementary Public Health.
203. Elementary Rugby Football.
204. Elementary Soccer.
205. Elementary Sociology.
206. Elementary Statistics.
207. Elementary Swimming.
208. Elementary Tennis.
209. Elementary Track and Field.
210. Elementary Track and Field Methods.
211. Elementary Wrestling.
212. English.
213. English and American Literature.
214. English Composition.
215. English Folk Dancing and Games.
216. English Literature.
217. Environmental and Group Hygiene.
218. Eurythmics.
219. Evaluation, Selection and Adaptation of Activities.
220. Fencing.
221. Festivals.
222. Festivals and Pageants.
223. Field Hockey and Soccer Football.
224. Field Science.
225. Field Work in Physical Education.
226. First Aid.
227. First Aid and Safety First.
228. First Aid Treatment of Athletic Injuries.
229. Folk and Clog Dancing.
230. Folk and National Dances.
231. Folk Dances and other Simple Dances.
232. Folk Dancing.
233. Folk Dancing and Dramatic Games.
234. Food and Dietetics.
235. Football.
236. Football Coaching.
237. Football Officiating and Management.
238. Formal Activities.
239. Formal Gymnastics.
240. Formal Gym and Rhythmic Activities.
241. Formal Gymnastics and Methods in Formal Activities.
242. Formalized Drill.
243. Foundations of Health and Physical Education.
244. French.
245. French Literature.
246. Freshman Basketball.
247. Freshman Corrective Activities.
248. Freshman Hockey.
249. Freshman Pedagogy.
250. Freshman Physical Practice.
251. Freshman Track.
252. Fundamental Gymnastics of Niels Bukh.
253. Games.
254. Games and Athletics.
255. Games and Athletic Sports for Men.
256. Games and Clogging.
257. Games and Social Activities.
258. Games of Skill.
259. General Bacteriology.
260. General Bacteriology and Microbiology.
261. General Biology.
262. General Chemistry.
263. General Gymnastics.
264. General History.
265. General Human Anatomy.
266. General Hygiene.
267. General Inorganic Chemistry.
268. General Methods and Leadership Training in Physical Education.
269. General Physiology.
270. General Principles of Biology.
271. General Psychology.
272. General Sociology.
273. Genetic Psychology.
274. German.
275. Golf.
276. Golf — Theory and Practice.
277. Graduate Basketball.
278. Graduate Hockey.
279. Graduate Track.
280. Group Hygiene.
281. Growth and Development of the Child.
282. Guidance.
283. Gymnasium.
284. Gymnastic and Athletic Dancing.
285. Gymnastic Dancing for Boys and Men.
286. Gymnastics.
287. Gymnastics and Apparatus Work.
288. Gymnastics and Games.
289. Gymnastics and Sport Practice.
290. Gymnastics, Sports, Games and Dancing.
291. Gymnastic Methods.
292. Handball.
293. Health Education.
294. Health Examinations and Anthropometry.
295. Health Inspection of School Children.
296. Health Protection of Children.
297. Heavy Apparatus and Tumbling.
298. Heredity and Evolution.
299. High School and College Athletics.
300. High School and College Gymnastics.
301. High School Athletics.
302. High School Chemistry.
303. High School Gymnastics.
304. History and Administration of Physical Education.
305. History and Development of Physical Education.
306. History and Principles of Education.
307. History and Principles of Physical Education.
308. History and Theory of Physical Education.
309. History of Education.
310. History of Modern Europe.
311. History of Philosophy.
312. History of Physical Education.
313. History, Theory and Administration of Physical Education.
314. Hockey.
315. Human Anatomy.
316. Human Physiology.
317. Hygiene.
318. Hygiene and First Aid.
319. Hygiene and Sanitation.
320. Hygiene and Wholesome Living.
321. Hygiene for Public School Teachers.

322. Hygiene of Childhood and Adolescence.
323. Hygiene of the School Child.
324. Hygiene of the School Child and Adolescent.
325. Ice Hockey.
326. Ideas and Forms in English and American Literature.
327. Individual Gymnastics.
328. Individual Hygiene.
329. Individual Research in Physical Education.
330. Individually Adapted Exercises.
331. Indoor Athletics for Women.
332. Indoor Social Activities.
333. Indoor Track.
334. Industrial Economics.
335. Industrial Management.
336. Insects and Disease.
337. Intermediate Activities.
338. Intermediate Archery.
339. Intermediate Dancing.
340. Intermediate Diving.
341. Intermediate Formal Gymnastics.
342. Intermediate French.
343. Intermediate German.
344. Intermediate Interpretative Dancing.
345. Intermediate Natural Dancing.
346. Intermediate Tennis.
347. Intermediate Swimming.
348. International Relations.
349. Interpretative Dancing.
350. Intramural Sports.
351. Introduction to Education.
352. Introduction to Educational Measurement.
353. Introduction to Teaching with Observation.
354. Introductory Physiology.
355. Junior Basketball.
356. Junior Hockey.
357. Junior Swimming.
358. Junior Track.
359. Kinesiology.
360. Kinesiology and Applied Anatomy.
361. Kinesiology and Corrective Exercises.
362. Labor Problems.
363. Laboratory Practice with Mental Patients.
364. Lacrosse.
365. Leadership and Training of Leaders of Women and Girls.
366. Leadership of Boys' and Girls' Activities in Club Organizations.
367. Life Saving.
368. Lower Division Baseball.
369. Lower Division Basketball.
370. Lower Division Football.
371. Lower Division Swimming.
372. Lower Division Tennis.
373. Lower Division Track and Field.
374. Mammalian Anatomy.
375. Management of Athletic Finances.
376. Management of Athletics, Standards of Sportsmanship and Functions of Officials for Sports and Athletics.
377. Mass Athletics.
378. Mass Tumbling.
379. Massage.
380. Massage and Athletic Training.
381. Massage Laboratory.
382. Material and Methods for Teaching Physical Education in Elementary and High Schools.
383. Medical Gymnastics.
384. Medical Supervision of Athletics.
385. Methods and Practice in Coaching American Football.
386. Methods and Practice in Coaching Athletics.
387. Methods and Practice in Coaching Baseball.
388. Methods and Practice in Coaching Basketball.
389. Methods and Practice in Coaching Track and Field Events.
390. Methods and Practice in Coaching Swimming and Life Saving.
391. Methods and Practice in Teaching Gymnasium Activities.
392. Methods and Practice in Teaching Gymnastics and Mass Athletics.
393. Methods and Practice in Teaching Playground Activities.
394. Methods in Acrobatics and Apparatus.
395. Methods in Athletic Activities.
396. Methods in Athletic Dancing.
397. Methods in Baseball and Track.
398. Methods in Boxing.
399. Methods in Coaching Sports.
400. Methods in Coaching Competitive Athletics.
401. Methods in Corrective Gymnastics.
402. Methods in Dancing, Play and Recreational Education.
403. Methods in Fencing.
404. Methods in Football and Basketball.
405. Methods in Formal Activities.
406. Methods in Formal and Rhythmical Activities.
407. Methods in Gymnastic Activities.
408. Methods in Health Education.
409. Methods in Individual Gymnastics.
410. Methods in Physical Education.
411. Methods in Physical Examination and Health Supervision.
412. Methods in Physical Examination and Supervision.
413. Methods in Play Activities.
414. Methods in Plays and Games.
415. Methods in Soccer.
416. Methods in Swimming and Diving.
417. Methods in Tennis.
418. Methods in Wrestling.
419. Methods of Coaching.
420. Methods of Coaching Basketball and Baseball.
421. Methods of Physical Training in High Schools.
422. Methods of Teaching Athletics.
423. Methods of Teaching Health.
424. Methods of Teaching in Physical Education Activities.
425. Methods of Teaching Physical Education.
426. Methods of Teaching Physical Training Activities in the Elementary Schools.
427. Methods of Teaching Swimming and Life Saving.
428. Minor Sports.
429. Modern Authors.
430. Modern Developments in Physical Education.
431. Modern Dramatic Authors.
432. Music in Physical Education.
433. Music (Rhythmics).
434. Natural and Clog Dancing.
435. Natural and Formal Activities.
436. Natural Dancing.
438. Natural Gymnastics and Dancing for Men.
439. Natural Gymnastics and Swimming.
440. Nature and Function of Play.
441. Nature, Function and Organization of Play.
442. Normal Diagnosis.
443. Observation and Participation.
444. Officiating in Competitive Games.
445. Officiating in Football, Baseball and Basketball.
446. Oral Expression.

447. Organic Examination and Efficiency Tests.
448. Organization and Administration of Community Play and Recreation.
449. Organization and Administration of Health Education.
450. Organization and Administration of Health Protection.
451. Organization and Administration of Physical Education.
452. Organization and Administration of Physical Education and Hygiene in Colleges and Universities.
453. Organization and Administration of Physical Education and Hygiene in Secondary Schools.
454. Organization and Leadership of Activities for Girls of the Adolescent Age.
455. Organization and Leadership of Physical Training Activities.
456. Organization and Management of School Playgrounds.
457. Organization and Supervision of Physical Education.
458. Organization and Teaching of Activities for Boys in Secondary Schools.
459. Organization and Teaching of Games and Sports.
460. Organization of Physical Education.
461. Organization of Playgrounds and Play Activities.
462. Orthopedics and Physiotherapy.
463. Outdoor Athletics for Women.
464. Pageantry and Pantomime.
465. Pathology.
466. Pedagogy of Physical Education.
467. Pedagogy of Teaching and Officiating.
468. Pedagogy of Teaching Physical Education.
469. Personal and Community Hygiene.
470. Personal and General Hygiene.
471. Personal Hygiene.
472. Personal Hygiene and First Aid.
473. Personnel Management.
474. Physical Achievement Tests.
475. Physical Activities.
476. Physical Diagnosis.
477. Physical Diagnosis and Anthropometry.
478. Physical Diagnosis and Examinations.
479. Physical Education.
480. Physical Education Activities.
481. Physical Education Administration.
482. Physical Education and Recreation Organization and Administration.
483. Physical Education in Elementary and Secondary Schools.
484. Physical Education for Grade Teachers.
485. Physical Education of Subnormal Individuals.
486. Physical Education Standards and Measurements.
487. Physical Education Tests and Measurements.
488. Physical Examination.
489. Physical Examination and Growth Divergencies.
490. Physical Exercise for Health.
491. Physical Measurements and Prescription of Exercise.
492. Physical Therapeutics.
493. Physical Training.
494. Physical Training in the Public School.
495. Physics.
496. Physiology.
497. Physiology of Activity.
498. Physiology of Exercise.
499. Physiological Chemistry.
500. Physiological Hygiene.
501. Play Activities.
502. Play and Game Supervision.
503. Play and Playgrounds.
504. Play and Playgrounds, Community Centers, and Community Recreation.
505. Play and Recreation.
506. Play and Recreational Activities for Mental Patients.
507. Playground Administration.
508. Playground and Gymnasium Games.
509. Playground Practice.
510. Playground Teaching.
511. Plays and Games.
512. Political and Constitutional History of United States.
513. Population Problems.
514. Posture Training.
515. Practical Work.
516. Practical Work in Health Education.
517. Practice in Athletic Activities.
518. Practice in School Health Examinations.
519. Practice Teaching.
520. Practice Teaching in Physical Education.
521. Principles and Methods of Coaching.
522. Principles and Methods of Work with Boys.
523. Principles and Programs of Physical Education.
524. Principles of Adaptation of Activities.
525. Principles of Community Leadership.
526. Principles of Economics.
527. Principles of Education.
528. Principles of Health Education.
529. Principles of Physical Education.
530. Principles of Physical Training.
531. Principles of Physiology.
532. Principles of Social Organization and Control in Public Education.
533. Principles of Teaching.
534. Principles of Teaching Health.
535. Principles of Teaching in Physical Education.
536. Principles, Organization and Administration of Health and Physical Education.
537. Problems in Hygiene and Health Education.
538. Problems in Physical Education.
539. Program of Physical Education Activities for Rural Schools.
540. Programs and Activities for Mental Patients.
541. Psychology and Child Study.
542. Public Hygiene.
543. Public Speaking.
544. Public Speaking for Teachers.
545. Recreation Administration.
546. Recreational Activities for Elementary Schools and Playgrounds.
547. Recreational Activities for Men.
548. Recreational Baseball.
549. Remedial Exercises.
550. Remedial Gymnastics.
551. Research in Physical Education.
552. Restricted Exercise.
553. Rhythmic Gymnastics.
554. Rhythmical Activities.
555. Rhythms, Dramatic Plays, Games and Dances of Early Childhood.
556. Rugby.
557. Rural Economics.
558. Rural Sociology.
559. Sanitary Bacteriology.
560. School and Building Hygiene.
561. School Drama and Festival.
562. School Health Supervision and Medical Inspection.
563. School Hygiene.
564. School Pageantry.
565. Scouting.

566. Scoutmastership.
567. Seasonal Activities.
568. Secondary Education.
569. Self-Testing Activities.
570. Seminar.
571. Seminar in Physical Education.
572. Senior Basketball.
573. Senior Hockey.
574. Senior Swimming.
575. Senior Track.
576. Singing Games.
577. Skiing.
578. Soccer.
579. Soccer Coaching and Officiating.
580. Social and Recreational Leadership.
581. Social Ethics.
582. Social Evolution.
583. Social Psychology.
584. Social Science.
585. Societal Hygiene.
586. Sociology.
587. Sophomore Basketball.
588. Sophomore Corrective Activities.
589. Sophomore Hockey.
590. Sophomore Physical Practice.
591. Sophomore Track.
592. Special Adaptations for Cardiac Training.
593. Special Adaptation to Orthopedic and Post-Surgery Cases.
594. Special Adaptations to Paralytic Conditions.
595. Special Applied Physical Education and Hygiene.
596. Special Elective Practice.
597. Special Methods and Adaptations for Crippled, Deaf and Blind.
598. Special Problems in Physical Education.
599. Sports.
600. Sports Theory.
601. Statistics.
602. Student Teaching.
603. Student Teaching and Conferences.
604. Supervision of Health Protection.
605. Supervision of Hygiene and Physical Education.
606. Supervision of Physical Education.
607. Supervision of Playgrounds.
608. Swimming.
609. Swimming and Diving.
610. Swimming Coaching and Officiating.
611. Swimming, Diving and Life Saving for Men.
612. Tactics and Calisthenics.
613. Teaching Activities of Pre-Adolescent Children.
614. Teaching Dancing.
615. Teaching Gymnastic Drills.
616. Teaching Hygiene and Physical Education in Colleges.
617. Teaching of Activities of Little Children.
618. Teaching of Baseball.
619. Teaching of Basketball.
620. Teaching of Elementary School Activities.
621. Teaching of Fundamental Gymnastics.
622. Teaching of Gymnastics — Heavy Apparatus.
623. Teaching of Gymnastics, Mass Tumbling and Mass Athletics.
624. Teaching of Health and School Health Problems.
625. Teaching of Hockey.
626. Teaching of Hygiene and Physical Education.
627. Teaching of Physical Education.
628. Teaching of Physical Education in Elementary School.
629. Teaching of Physical Education for Girls in Secondary Schools.
630. Teaching of Swimming.
631. Teaching Self-Testing Activities or Stunts.
632. Teaching Swimming.
633. Team games and Apparatus and Advanced Stunts.
634. Tennis.
635. Theory.
636. Theory and Methods of Physical Education.
637. Theory and Practice of Physical Education.
638. Theory of Athletics.
639. Theory of Dancing.
640. Theory of Gymnastics.
641. Theory of Health Education.
642. Theory of Physical Education.
643. Theory of Physical Education and Recreation.
644. Theory of Physical Education with Practice Teaching.
645. Theory of Physical Examination and Remedial Gymnastics.
646. Theory of Rhythmic Activity.
647. Theory of Teaching and Leadership.
648. Theory of Teaching and Leadership in Physical Education.
649. Theory of Teaching and Leadership in Physical Education in Secondary Schools.
650. Theory of the Dance.
651. Theory, Principles and History of Physical Education.
652. Therapeutic and Corrective Gymnastics.
653. Therapeutic Gymnastics.
654. Track.
655. Track and Field.
656. Track Coaching.
657. Track Officiating and Management.
658. Tumbling.
659. Tumbling and Stunts.
660. Use of Libraries.
661. Varsity Baseball.
662. Varsity Basketball.
663. Varsity Football.
664. Varsity Swimming.
665. Varsity Tennis.
666. Varsity Track and Field.
667. Volley Ball.
668. Weaponless Defense.
669. World Classics by Translation.
670. Wrestling.
671. Zoology.

In May, 1928, a state conference of specially invited persons interested in teacher training in Physical Education was held at Santa Maria, California. Mimeographed lists of the 671 differently named courses shown above were distributed. After considerable discussion, a final list of course names was agreed to by a large majority of those present. This list was then duplicated and sent to a selected group of thirty-nine persons, with a request for their

judgments as to the proper year placement and number of credit hours each course should carry. The replies received were tabulated and the results used by the final reviewing committees in their selection of the year placement and credit hours which the courses now carry.

Two committees, representing the northern and southern parts of the state, were appointed to advise on procedure and serve as final reviewing committees. These committees selected the people who were asked to contribute the content outlines for the courses included in Bulletin E-1. The reviewing committee consisted of the following:

Miss Ruth Atkinson, Chairman, Department of Physical Education for Women, University of California at Los Angeles, Los Angeles, California.

Dr. Edna Bailey, Associate Professor of Education, University of California, Berkeley.

Miss Rosalind Cassidy, Professor of Physical Education, Mills College.

Dr. Frederick Cozens, Associate Professor of Physical Education for Men, University of California at Los Angeles.

Mrs. Evelyn Clement, Chief, Division of Teacher Training and Certification, State Department of Education, Sacramento.

Mr. C. L. Glenn, Director, Division of Physical Education, Los Angeles City Schools.

Miss Germaine Guiot, Associate Professor of Physical Education, University of Southern California, Los Angeles.

Mr. Ralph LaPorte, Professor of Physical Education, University of Southern California, Los Angeles.

Dr. Anita Laton, Supervisor of the Teaching of Science, University High School, Oakland.

Dr. Sven Lokrantz, Director, Division of Health and Corrective Physical Education, Los Angeles City Schools.

Miss Violet Marshall, Chairman, Department of Physical Education for Women, University of California, Berkeley.

Dr. Thomas A. Storey, Director, School of Hygiene and Physical Education for Men, Stanford University.

Miss Winifred Van Hagen, Chief, Bureau of Physical Education for Girls, State Department of Education, Sacramento.

The five-year curriculum for the professional preparation of Physical Education teachers for secondary schools, as presented in Bulletin E-1 (issued by the State Department) is here outlined. With the exception of a few courses, the content outline, year placement, hours credit, recommended texts and references are given for each course listed under general captions A, B and C:

A. BASIC SCIENCE COURSES

Year
Place- Hrs.
ment Credit*

2	3	1. Anatomy
1	5	2. Biology
1	5	3. Chemistry
1	3	4. Hygiene

Year
Place- Hrs.
ment Credit

2	6	5. Physiology
2	3	6. Psychology
3	3	7. Sociology

B. GENERAL COURSES IN PHYSICAL EDUCATION AND HEALTH

Year
Place- Hrs.
ment Credit

4	3	1. Administration of Physical Education
5	3	2. Administration of School Health Program
4	2	3. Community Recreation
4	3	4. Corrective Physical Education (Individual Program Adaptations)
3	3	5. Growth and Development of the Child
3	3	6. Kinesiology (Applied Anatomy)
3	3	7. Physiology of Exercise (Applied Physiology)
3	3	8. Principles of Health Education
3	3	9. Principles of Physical Education
6	2-4	10. Research in Physical Education
5	4	11. Seminar in Physical Education
5	2	12. Supervision of Physical Education
5	2	13. Tests and Measurements in Physical Education

C. COURSES IN ACTIVITY AND TECHNIQUE OF TEACHING

Except in cases where the activity and technique of teaching the activity are given in the same course, activity courses should precede during the first, second and third years, with the technique of teaching courses coming the third, fourth and fifth. The credit value suggested for the activity courses is to be considered a minimum rather than the desirable amount.

1. AQUATICS

Year
Place- Hrs.
ment Credit

$\frac{1}{4}$	a.	Canoeing
$\frac{1}{2}$	b.	Diving
$\frac{1}{2}$	c.	Life Saving

Year
Place- Hrs.
ment Credit

$\frac{1}{4}$	d.	Rowing
$\frac{1}{2}$	e.	Swimming

 $\frac{1}{2}$ 2. GAMES OF LOW ORGANIZATION

*One credit hour is defined as one hour weekly (for a term of 15 to 18 weeks) of a student's time in lecture or recitation, together with the time necessary in preparation thereof, or a longer time in laboratory or other exercises not requiring preparation.

3. GYMNASTIC ACTIVITIES

- | | |
|--------------------------------|-----------------------------------|
| $\frac{1}{2}$ a. Apparatus | $\frac{1}{2}$ d. Pyramid Building |
| $\frac{1}{2}$ b. Free Exercise | $\frac{1}{2}$ e. Stunts |
| $\frac{1}{4}$ c. Marching | $\frac{1}{2}$ f. Tumbling |

4. RHYTHMICAL ACTIVITIES

- | Year
Place- Hrs.
ment Credit | | Year
Place- Hrs.
ment Credit | |
|------------------------------------|--|---|--|
| $\frac{1}{2}$ a. Clog Dancing | | $\frac{1}{2}$ c. Natural Dancing (Interpretative) (women) | |
| $\frac{1}{2}$ b. Folk Dancing | | $\frac{1}{2}$ d. Social Dancing | |

5. SELF-DEFENSE ACTIVITIES

- | Year
Place- Hrs.
ment Credit | | Year
Place- Hrs.
ment Credit | |
|------------------------------------|--|---|--|
| $\frac{1}{2}$ a. Boxing (men) | | $\frac{1}{4}$ c. Weaponless Defense (men) | |
| $\frac{1}{4}$ b. Fencing | | $\frac{1}{2}$ d. Wrestling (men) | |

6. SPORTS

- | Year
Place- Hrs.
ment Credit | | Year
Place- Hrs.
ment Credit | |
|--|--|--|--|
| $\frac{1}{2}$ a. American Football (men) | | $\frac{1}{2}$ i. Playground Baseball (women) | |
| $\frac{1}{2}$ b. Archery | | $\frac{1}{2}$ j. Soccer | |
| $\frac{1}{2}$ c. Baseball (men) | | $\frac{1}{2}$ k. Speedball | |
| $\frac{1}{2}$ d. Basketball | | $\frac{1}{2}$ l. Squash Rackets | |
| $\frac{1}{2}$ e. Equitation | | $\frac{1}{2}$ m. Tennis | |
| $\frac{1}{2}$ f. Field Hockey (women) | | $\frac{1}{2}$ n. Track and Field | |
| $\frac{1}{2}$ g. Golf | | $\frac{1}{2}$ o. Volley Ball | |
| $\frac{1}{2}$ h. Handball | | $\frac{1}{2}$ p. Water Polo | |

D. RECOMMENDED COURSES IN EDUCATION

- | Year
Place- Hrs.
ment Credit | | Year
Place- Hrs.
ment Credit | |
|------------------------------------|---|------------------------------------|-----------------------------------|
| 5 6 1. | Directed Teaching in Physical Education | 3 3 5. | Elementary Statistics |
| 5 3 2. | Educational Administration | 4 3 6. | History of Education |
| 4 3 3. | Educational Psychology | 4 3 7. | Principles of Secondary Education |
| 4 3 4. | Educational Tests and Measurements | 4 3 8. | Public Education in California |
| | | 4 3 9. | Vocational Guidance |

E. RECOMMENDED COURSES IN OTHER FIELDS

Year	Place-	Hrs.		Year	Place-	Hrs.	
ment	ment	Credit		ment	ment	Credit	
5	3	1.	Abnormal Psychology	2	2	7.	Hand Craft
1	3	2.	Art	1	3	8.	Music
2	4	3.	Bacteriology	2	3	9.	Nutrition
2	2	4.	Camp Craft	2	2	10.	Pageantry
1	3	5.	Dramatics	2	3	11.	Principles of Economics
1	3	6.	English Composition	1	3	12.	Public Speaking

BOOK REVIEWS

TAP DANCING FUNDAMENTALS AND ROUTINES. By Edith Ballwebber. Clayton F. Summy Company, Chicago. 70p. \$2.00.

At this time when the demand is so general for new material in tap dancing, Miss Ballwebber has brought forth an especially fine and most acceptable piece of work of this character. Surely she has taken all care to present a well planned, understandable, and usable book. Immediately on seeing it, one is impressed by its attractive modernistic cover design, and on further investigation, by the unique system of counting and the clear illustrations of steps as taken from motion pictures.

This is a collection of twelve multipartite routines, arranged in order of difficulty from simple to complex, each having its own musical accompaniment. The author has given particular care to the presentation of twenty-nine foundation steps with a key to her system of counting which makes them plain and easy to follow. In the routine descriptions, units are used which make for economy of space and for less complication in repetitions. The counting scheme is definite and is used with every pattern, so that one finds it perfectly easy to fit the steps to the music. The routines are interesting and are of varied character. The most complicated ones are not so difficult that they are not usable.

The illustrations used in this connection are plentiful and very helpful, for they are clear and accurate. The author says of the music, "Popular music may be used for the routines wherever this is desired. The music which Frances Throop has arranged for this volume was designed to fit each routine and gives that certain swing which is so necessary for tap dancing. There is an unusual freshness in her arrangements that is rea-

son enough for publishing this book." Some of the terminology used is new, at least in so far as my experience with tap dancing goes.

I feel that Miss Ballwebber has written a book which will fulfill her desire "to present the fascinating rhythms of tap dancing in a form that will be readily understandable, and available for the use of the teachers of physical education."

Grace L. Ryan
Professor of Physical Education
Central State Normal,
Mt. Pleasant, Mich.

STUDYING THE MAJOR SUBJECTS. By Claude C. Crawford, Ph.D., University of Southern California. 384p. \$2.00.

"Studying the Major Subjects" is a novel contribution in that it contains in a single volume suggestions for the study of all the subjects of the curriculum. The book contains eleven chapters, each one considering a separate subject.

One of the eleven chapters is given over to a discussion of how to study health and physical education. Dr. Crawford offers pertinent suggestions on how to enjoy games as a spectator; how to learn the rules and fine points of a game; how to develop permanent play interests, habits and skills; how to develop a proper spirit of sportsmanship, etc. In concluding this chapter the author gives hints concerning the best method of acquiring health knowledge and habits. Particular stress is placed upon the practice of mental hygiene.

Dr. Crawford shows a broad understanding not only of the various high school subjects but of the best methods of studying them. The book should be of practical value as a text for specific courses in how to study for high school and perhaps freshman

college students. From the standpoint of a health and physical educator its chief value lies in its discussion of methods.

C. D. Giaque

Associate Prof. of Physical Education
Ohio University
Athens, Ohio

INTRAMURAL ATHLETICS AND PLAY DAYS. By Edgar Marian Draper and George Mimms Smith. Pages xii, plus 137. A. S. Barnes & Co. \$1.00.

In this excellent little book, the authors succeed in showing the place of intramural athletics and play days in the realization of the present philosophy of physical education, which emphasizes natural movement rather than a program of formal calisthenics. It is obvious that experience speaks in the consideration of objectives, program of sports, organization and administration. The general status of intramural athletics in high schools, at present, is portrayed by the answers to a very sensible questionnaire which allowed the recipient to state his case in his own words. The discussion of student leadership, and also of the intramural director, in regard to his qualifications, his relation to the athletic coach, his office and his future, should concern both the administrator and the intramural director. Only one chapter is devoted to the girls' play day. The boys' organization is emphasized because the authors feel that "there is little material difference between the programs which have been worked out for the boys and the girls in the general intramural program." At the end of the book, there is a splendid bibliography, in which references of special value are "starred."

INTRAMURAL ATHLETICS AND PLAY DAYS will receive a warm welcome from high school directors, many of whom have attempted to adopt college and university programs with very sad results. The differences between college programs and high school programs have been so marked as to create a great need for this guide

to high school problems. This well organized book may well be in the library of every college and university intramural director. It is indispensable to the administrators and intramural directors of the secondary schools.

Adolph W. Samborski
Director of Intramural Athletics
Harvard University

THE CHILD IN AMERICA. By Wm. I. Thomas and Dorothy S. Thomas. Pages XIV plus 583. Alfred A. Knopf, New York, 1928. \$6.50.

This is one of the most remarkable books contributing to the study of children of the past decade. These able writers have discussed the whole field of the approach to child study and adjustment from a large number of angles. Part One concerns itself with a variety of maladjustments. These are given largely in the form of case studies which are discussed in a way which shows their contribution to social and mental adjustment.

Part Two takes up various types of practical programs for assisting the child to adjust. This begins with a treatment of delinquency. Various experiments in this field are described and discussed. Psychiatric child guidance clinics are then presented. Community organizations for the assisting and the reclamation of the child are discussed at length. Maladjustment in the schools is then taken up together with the various methods used in different parts of the country to remedy these conditions. Character education in the schools and parent education conclude this part of the book.

The third part of the book discusses research programs and gives a most searching critical analysis of the mental measurement approach, the personality testing approach, the psychiatric approach, the physiological morphological approach, and the methodology of behavior study. In the chapter on personality testing is one of the best discussions of character education problems we have seen.

This book is not particularly easy reading. The style is easy but the content is comprehensive and demands some fair knowledge of psychology and sociology for its masters. It is, however, a book which gives an excellent base from which to build a personal guidance program.

C. H. McCloy
Physical Education Dept.
State University of Iowa.

NATURE OF CONDUCT, P. M. Symonds; pages XI plus 346; Macmillan Co., New York: 1928; \$1.90.

This book is an excellent contribution to the psychology of conduct with which those dealing with character education are very much concerned. A critical reader will perhaps not agree with Professor Symonds in all of his conclusions, but he can not help but be stimulated and will undoubtedly profit much.

This presentation endeavors to place conduct as much as possible upon an objective behavioristic basis rather than on a subjective one. A new concept is introduced, namely the concept of the "confact" which is the conduct response rather than the mental or verbal response. Professor Symonds gives a critical review of the Thorndike psychology and presents an excellent summary of the behavioristic substitute, and correlates this excellently with the current educational psychological theory.

Good definitions are given of character and of personality, together with a summary of the definitions given by most of the important writers of our time. Conduct codes are discussed in detail and many examples given. The book is a contribution throughout to the methods of conduct education with a thorough study of the bases of such education. A chapter is given at the end of the book which discusses curriculum construction in conduct.

The book is not written at all from the standpoint of the physical educator but the material is such that a careful reader can utilize it without difficulty.

This book will probably be some-

what difficult for any reader who is not reasonably well trained in psychology. For those who have a fair grounding in this subject, however, it is one of the most stimulating books of the last two years. The book is not illustrated. The index is adequate and the bookmaking good.

C. H. McCloy
Physical Education Department,
State University of Iowa.

HEALTH EDUCATION TESTS, by Raymond Franzen, American Child Health Association, 1929; paper, 60c; cloth, 90c; Test sheets sold in packages of fifty, various prices; sample set obtainable at 25c.

These tests represent an excellent scientific study directed to a development of a valid reliable test of health knowledge. There is a book of XX plus 70 pages which tells all about the tests, how to use them and how to score them. These tests, unfortunately, are limited to use with eleven, twelve and thirteen year old children. They would, however, lend themselves excellently for use with elementary school boys.

The monograph is worthy of very careful study by any Physical Director who would like to delve into methods of creating such tests. Certain parts of it, however, are somewhat difficult for the statistically untrained reader to assimilate. About eight-tenths of the book will be quite readily understood by most Physical Directors.

The tests themselves come in five separate forms and may be purchased separately in packages of fifty test sheets. They will cost approximately nine cents for each pupil if each one is given all five forms. Two scoring sheets are included in each package of fifty test sheets.

This battery of tests marks the beginning of the development of a number of tests based upon adequate research.

C. H. McCloy
Physical Education Department,
State University of Iowa.

GATES-STRANG HEALTH KNOWLEDGE TEST, Association Press, Series of Character and Personality Tests, Form A. In packages of twenty with manual of directions. \$3.50; sample copy 25c.

This health knowledge test, which is not a new one, represents careful study by Dr. E. I. Gates and Dr. Ruth Strang of Teachers' College, Columbia University. The form published by Association Press is well adapted to high school and young men's ages. Full directions are given for scoring. It is the opinion of the reviewer that this type of test should be used more extensively in departments of Physical Education. The Physical Director is not infrequently working blindly in the field of health education with no knowledge of what the student knows in this field. These tests will give a rather adequate conception of what the local school system has been teaching and will enable the health educator to go on from there more intelligently than is usually the case.

C. H. McCloy

Physical Education Department,
State University of Iowa.

STUDENT PARTICIPATION IN SCHOOL GOVERNMENT. Vineyard, J. J. and Poole, C. F. 104 pages, A. S. Barnes, 1930. \$1.00.

This little volume is the latest addition to the Barnes' *Extra Curricular Library*, by two high school principals. It is designed to assist those planning to inaugurate student participation and those seeking objectives and organized practices for further improvement of existing organizations. It incorporates the experience of the authors, a resume of the literature, and the results of two questionnaire studies. Beginning with a chapter on the educational philosophy underlying student participation in school government the authors briefly trace the history of the "movement" from Plato to Poole. Chapter II lists several excellent suggestions to beginners in this field of pupil activity. Succeeding chapters

outline simplified parliamentary procedure; a survey of present practices in 191 schools in forty states; values and problems in student participation, and close with "embryonic suggestions for sponsors."

An appendix of forms for nominations and elections and an annotated bibliography are added.

This treatise is characterized by clear and pointed writing, scrupulous regard for educational theory, (derived largely from Dewey, Kilpatrick, Briggs and the Seven Cardinal Principles) and evidence of wide practical experience with the problems outlined. Its viewpoint is eminently sensible and its object worthy.

Frederick Rand Rogers, Ph.D.
State Director of Physical Education,
New York.

A MANUAL OF NORMAL PHYSICAL SIGNS. By Dr. Wyndham B. Blanton. C. V. Mosby Co. 246 p. \$3.00.

The Manual which Dr. Blanton has presented to the student of Physical Diagnosis is very acceptable because of its outline form and freedom from pathology.

The first chapter, dealing with topography, gives a very clear survey of body regions, both surface and deep, and for the medical student is an excellent preparation for the succeeding chapters. While the book contains much that is unnecessary for the student and teacher of Physical Education, it also contains some very valuable chapters; such as Chapter III, Inspection; the part of Chapter VII, Constitutional Signs, that deals with measurements and body proportions in which there are some interesting indices and pictures of body types; Chapter XIV describing abdominal variations and measurements; Chapter XV giving many good suggestions regarding the back, especially the relation of the various segments of the spine to underlying organs and other surface structures such as muscle groups and bones of the shoulder girdle and pelvis. The outline of the inspection of the scapulae and verte-

brae, including the curvatures and movements will be of interest to the student and teacher of Therapeutic Gymnastics; Chapter XVI concerning the extremities which would be more complete if something concerning the movements and musculature of the feet was included; and Chapter XX comparing the findings in childhood and old age.

Helen D. Denniston, M.D.
Professor of Physical Education,
University of Wisconsin.

TUBERCULOSIS—ITS CAUSE, PREVENTION, AND CARE, by Frank H. Livingston. The Macmillan Company. p. 191. Price \$2.50.

This is an effort to discuss in simple terms what tuberculosis is, what its course is likely to be, and the things that an individual should know regarding its prevention, and arrestment. The author says it is a book "by a layman, for a layman, and with a layman's point of view."

It emphasizes the dangers of underweight and malnutrition, and the need of getting expert medical advice. It discusses treatment; particularly rest, food, the different operations for securing rest of pulmonary tissues, and light therapy. There are chapters on climate, sanatoriums, prevention, and types of occupation best suited to arrested cases.

To the technically trained physician, the discussion seems inadequate. Probably, however, it contains as much as the layman will read, absorb, or use.

Charles H. Keene, M.D.
University of Buffalo.

TESTS AND MEASUREMENTS IN PHYSICAL EDUCATION. By Dr. John F. Bovard and Dr. Frederick W. Cozens. W. B. Saunders Company, 1930. 364 pages. \$2.75.

Tests and Measurements in Physical Education by Bovard and Cozens may be considered our first book attempting to cover the whole field of measurement in Physical Education. A previous book by the same authors dealt with a part of the field only. The

task confronting the authors was gigantic for much of the subject matter called for was found in journals and periodicals.

The authors have, for the first time, gathered in one book data and information relating to "The Status of Measurement in Physical Education," "The Tools of Measurement," and "The Theory and Practice of Test Administration."

Part I of the text surveys the field of test and measurement devices which have been developed. The survey, while comprehensive, is not fully complete, a fact indicated by the authors through their use of the terms "typical contributions" in chapter titles. Tests referred to are classified under terms accorded them by popular usage. No attempt is made to rate, or evaluate procedures described. Supporting data and data relating to the use of tests have not been included. However, references are accurate and complete so that the reader is enabled to survey the field and to ascertain those sources to which he must apply for other data. One phase of measurement not included relates to tests of knowledge or information. Tests referred to are included under the headings of Anthropometrical tests, Strength tests, Cardiac Functional tests, Achievement tests, Neuro-Muscular Control tests, and Sport Technique tests. The classification refers to popular rather than valid usage.

Part II of the text deals with the tools of measurement. Here the aim of the authors has been "to keep all statistical formulae and methods as simple as possible and still present the essentials necessary to construct a test." The elementary treatment of statistical processes is indeed difficult and it is doubtful if the average teacher will find this part of text very easy reading. However, the research student will find a good treatment of the most common statistical procedures which he will be called upon to use.

Part III deals with the Theory and Practice of Test Administration. Much valuable and practical material is in-

cluded. Details of test construction perhaps lack a complete discussion of the characteristics of a good test and may appear slightly technical to the uninitiated reader.

The Survey of Standards of Achievement at various Ages, the Bibliography, and the Appendix giving test scores alone repay the low purchase price of the text.

Physical Educators owe Bovard and Cozens a deep debt of thanks for their very fine treatment of tests and measurements. They have given us a book that must be in the hands of every practical worker in Physical Education, and one which should stimulate other writers to attack this difficult and valuable phase of Physical Education.

Dr. David K. Brace
Professor of Physical Education,
University of Texas

PHYSICAL EDUCATION FOR ELEMENTARY SCHOOLS, by N. P. Neilson and Winifred Van Hagen. A. S. Barnes and Company, New York, 1930. 365 p. \$2.00.

The authors of this excellent book are to be congratulated upon the outstanding contribution they have made to the field of physical education. Physical education in elementary schools in the United States has long been, and still is to a great extent, a sadly neglected subject. This book, based upon the "Manual of Physical Education Activities for Elementary Schools of California," should do much to repair this situation by its presentation, in a very attractive form, of a wealth of activities arranged in a graded program for each of the eight elementary grades. It is the opinion of the reviewer that this book with its well-rounded program of physical education—a program consisting of story plays, rhythmical activities, hunting games, mimetics, relay races, stunts, athletic games and individual athletic events—represents the apogee of elementary school physical education literature.

The authors have divided their book

into two parts. Part I (66 pp.) deals principally with the organization and administration of a program of physical activities in elementary schools with Chapter Four, "The Classification of Activities" placing special emphasis upon the proper methods and techniques involved in teaching the various activities on the program. This chapter is a very excellent one, giving many valuable suggestions to improve the teaching of physical education.

Part 2 consists of a graded program of activities for each of the eight elementary grades. A large number of activities are given in each classification group, (there are 34 story plays for the first grade) some of which unfortunately seem to have been included merely for the purpose of adding variety to the program, a criterion which is seldom a safe one to follow in building courses of study.

The authors, naturally, have been influenced by their environment in the selection of activities. As a result there are numerous games on some of the grade programs that can be played only out of doors or in a gymnasium. It therefore becomes the duty of the elementary teacher to study carefully the activities on her grade program and to adapt these, where possible, to her own local situation. No one book can be expected to meet all the needs of every elementary school.

In their introduction the authors make the following statement. "The weak, the undernourished, the underdeveloped, the backward and the crippled—these are the children most in need of physical education." Lack of space forbids more than an expression of most hearty disagreement with this statement; it is doubtful if even the authors accept it at its face value. At least their book is characterized not by "corrective, therapeutic, rehabilitating, hospitalized procedures of a by-gone age" but by mentally satisfying activities that make their strongest appeal to the normal child.

H. G. Danford
Director of Physical Education
Lima, Ohio

MENTAL ASPECTS OF STAMMERING.

By C. S. Bluemel, M.D. Williams & Wilkins Co., Baltimore, 152 p. \$2.50.

This book should be of interest to all educators since it deals with an effort to get the student to think clearly and outlines definite means of attaining this end. Although he deals with the treatment of those who stammer, the author gives abundant evidence to support his theory that "stammering is a thought disturbance, not a speech defect."

We know that many of our modern contributions in education have come to us through an endeavor to solve the problems of those with particular defects. Manual training, mental testing and even physical education can be cited as examples. Dr. Bluemel, who as early as 1912 published a treatise entitled "Stammering and Cognate Defects of Speech," has not only made a contribution to our knowledge of the nature and causes of stammering but to education in general. The privilege and responsibility, as the author suggests, lie with the schools and this is the strategic place for the type of mental training that makes for speech correction.

Remedial training for stammering consists in thought training rather than speech training, for stammering often results from the effort to speak with unaided motor images. Feeling and sound of words must become mentally available. The stammerer suffers a momentary "amnesia" or loss of memory for the word he wishes to speak. His memory for word sounds is weak, just as one's musical memory may be weak. The capriciousness of stammering indicates that the impediment does not result from physical disease of the speech organs for "no defect could appear and vanish in this manner."

Dr. Bluemel adds further evidence that seems to be piling up to show that the mental attitudes of the student are extremely important in any or all attempts at education, for the mental attitude or "set" determines what stimuli are to be ignored. Stam-

mering occurs not only in speech but at times in swallowing, breathing, walking, writing, typing and most every form of motor activity. This is of direct interest to the physical educator.

The book is extremely practical and logically arranged so that teachers, parents and the stammerer himself may profit from its use. Many ingenious and pedagogically sound devices are employed from the kindergarten to the high school. These consist in part of clever use of games, pictures, nursery rhymes, story telling and the like. A book along this line for motivating corrective work and physical education for crippled children would be a great boon and companion for this fine work.

Charles C. Cowell
Y.M.C.A. College
Springfield, Mass.

INSOMNIA; HOW TO COMBAT IT. By Joseph Collins, M.D. New York: D. Appleton and Co., 1930. 131 p. \$1.50.

This book is one of an increasingly large series of popular health books dealing with such topics as colds, blood pressure, skin, cancer, ~~asthma~~ ^{asthma} and the like. Examination of the books of this series shows them, in the main, to be well written in popular understandable language by reliable medical men.

The author takes the stand that "unlike poets, poor sleepers are made, not born, and most of them are self-made" and that insomnia means that the human machine is out of order and needs readjustment and repair. The chief readjustment needed is in the line of mental processes and not so frequently the elimination of some purely physical cause. Enlightenment, determination and discipline are three of the most important factors needed on the part of the patient and the cultivation of an effective will is given as the most important step toward relief.

Dr. Collins favors the "inhibition" theory which explains sleep as a result of inhibitions that come from within of conditioned reflexes which enable the nervous system to disregard certain stimuli; the process of inhibition being stronger than the exciting agents.

Besides the usual references to indigestion, narcotics, etc., attention is given to the elimination of those mental factors such as worrying over fluctuating stock markets, fear of not sleeping and the like. Treatment in the latter case consists largely of suggestion and sometimes hypnotism. Although the author makes mention of the necessity for physical exercise and recreation out of doors, it seems that this very important item is not given due recognition. One is inclined to believe that the tired business man would be far less inclined to see the world through colored glasses and stay awake nights worrying about it if he spent some time each week on the golf course, the tennis court or the volleyball court where he would have the opportunity to release tension that otherwise works itself out in torturing him through inopportune dreams and memories.

C. C. Cowell
Y.M.C.A. College
Springfield, Mass.

A STUDY OF THE HISTORY, USES AND VALUES OF APPARATUS IN PHYSICAL EDUCATION. By Leopold F. Zwarg, University of Pennsylvania. 139 pages, price \$1.00.

The study of history is an important factor in discovering what has taken place in a particular field. It is a mirror reflecting true conditions of development, advancement, retardation or backwardness. Dr. Zwarg has brought together a wealth of unusual material on the history, uses and values of apparatus.

Dr. Zwarg divides his study into two parts. First, a historical review and survey of the field of physical education, and second, an experimental study. He begins in the first di-

vision by giving us the purpose of this study. He continues with a historical review of apparatus exercises and the individuals responsible for the development and advancement. He tells us the important part apparatus has played in the development of physical education in private and public school work, Y. M. C. A. and playground movements.

He also gives a classification of apparatus and exercises, the origin of gymnastic apparatus, date invented and the inventors. He gives a complete nomenclature for different apparatus and exercises. This is written in six different languages. He tells about the modern development and status of apparatus exercises in the physical education program.

The second division deals with an experimental study of six different inquiries to determine whether apparatus exercises can be used as a modern play activity and bring about results that are in harmony with the aims of modern education. These experiments in order of presentation are: introduction of apparatus exercises and graded tests in a boys' high school; preferences of students for the various forms of physical training activities, including apparatus exercises; the rating of apparatus work and the scoring of the tests; the correlation between off-hand judgments of motor ability in apparatus and measurement of motor ability in track and field work; the influence of age, height and weight upon motor ability; strength tests to determine the increase of strength that takes place in practice done upon apparatus.

This book is the first of its kind in this field. All teachers of the history of physical education should own a copy of this book. It is not only of value to teachers of apparatus, but to everyone who is interested or teaching physical education, and should be in all physical education libraries.

Randolph W. Webster
Instructor of Physical Education
University of Michigan

PHYSICAL EDUCATION FACILITIES FOR THE PUBLIC ACCREDITED HIGH SCHOOLS OF ALABAMA. By Jackson Roger Sharman, Ph.D., published by the Bureau of Publications, Teachers College, Columbia University, 1930; 78 pages, price \$1.75.

The author as state director of health and physical education for Alabama, found himself in the situation in which the state educational authorities were uncertain as to the facilities essential to carry out in the high schools the program of physical and health education legally adopted. This practical rather than a more academic problem was undertaken by Dr. Sharman as his dissertation in connection with his doctorate degree at Columbia University. There existed a feeling in Alabama that partly on account of its climate it might not require the same equipment as was fairly well standardized for states in the more northerly latitude, and hence the hesitancy about proceeding with the program.

Dr. Sharman adopted the procedure of ascertaining the actual conditions as to equipment by an intensive study of 104 schools selected at random from the list of 275 accredited high schools. This included among other details, the health examinations and service for pupils and teachers; health instruction offered; extent and nature of physical activities, required and elective, together with credit allowed for same; and the material equipment including libraries for carrying out the entire program. This section of his thesis is supplemented by many extracts and quotations from state regulations and suggestions collected from a wide range of authorities. In Chapter 3 the statement of his findings is most complete and constitutes a veritable mine of information. Chapters 4, 5 and 6 are devoted to the establishment of standards or criteria of satisfactory conditions for conducting an outdoor program. He then relates these conditions to the school problem, with particular reference to official weather reports, soil surfaces, etc., from various parts of the state.

With this comprehensive survey the author reaches certain conclusions or recommendations, among which may be noted the following:

Each school should have a minimum of five acres for athletic and play fields, and should have the number of play courses specified by the standard reached in the text.

Each school should have health examination and service, locker and shower facilities up to a standard outlined by the author.

Each school should have a shelter at least 50 ft. x 80 ft., with a ceiling of a minimum height of 18 feet, and with satisfactory floors. In certain portions of the state at least, this floor should be of wood and the sides should be enclosed.

There is advocated also a state building program which would involve a certain uniformity in school house plans, emphasizing multiple uses of the various facilities, and that certain existing state laws be modified so as to adapt requirements more definitely to conditions within the state.

This study is a splendid example of scientific approach to the problem, and doubtless will pave the way for similar investigations in other states.

G. B. Affleck
Y.M.C.A. College
Springfield, Mass.

PHYSICAL CAPACITY TESTS—NOTES ON TESTING TECHNIQUES AND THE SIGNIFICANCE OF TESTS. By Frederick Rand Rogers. A. S. Barnes and Co., New York. 53 pp., 75c.

This little book has undoubtedly been published as a manual of directions for the administration of Dr. Rogers' Physical Capacity Tests. While it is complete in itself, persons using the tests should have a knowledge of the philosophy underlying Physical Capacity Tests. This knowledge can only be acquired by reading Dr. Rogers' "Tests and Measurement Programs in the Re-direction of Physical Education" or his "Physical Capacity Tests in the Administration of Physical Education."

Part I stresses the necessity for following implicitly test directions, instructions and procedures in general and gives specific directions and illustrations for the use of the various testing instruments and measuring devices. These directions are set forth in clear and concise statements.

Part II sets forth the significance of Physical Capacity Tests as tools or devices (1) for classifying pupils into homogeneous teaching groups, (2) for discovering those who most need supervision, (3) for measuring the results of an activity program, and (4) for rating the efficiency of activity programs and teachers charged with the responsibility of conducting those programs.

Part III deals with the cost of instruments for conducting the tests, with supplementary instructions, sample record forms and strength index norms.

The book will be a very handy manual of useful information for all those who are attempting to classify boys and girls by means of Physical Capacity Tests.

Frederick W. Cozens
University of California
at Los Angeles.

THE MATERIALS OF LIFE. By T. R. Parsons. W. W. Norton & Co., Inc. 1930. 272p. \$3.00.

Have you ever wondered just what is meant by oxyhemoglobin dissociation and gas equilibria in blood? Have you ever longed for a simple explanation of the recent theories and facts of muscle contraction, lactic acid production and reduction, and oxygen debt? Are you anxious to get the straight facts on gland secretions, insulin and diabetes? Do you thrill in a simply told story of the history of great discoveries, let us say vitamins? If such tales in simple everyday language appeal to you, you will get great satisfaction from this book. The author is Demonstrator in Physiology in the University of Cambridge and

has written a popular elementary text in Biochemistry. Though not as sparkling as DeKruif in *Microbe Hunters* nor as clever as Wiggam in *The Fruit of the Family Tree*, Parsons makes a corresponding contribution to Biochemistry by putting this austere science into what he calls, "...friendlier speech of everyday, in order that the inherent poetry of these things might appear."

Without the use of a single chemical formula he talks successfully of the chemistry of foods, their digestion and utilization. Even nitrogen balance comes in for its share of treatment. The calorie, calorimetry, and the principle of conservation of energy together with the method of its demonstration in the human body are developed without any painful stretchings of the average reader's somewhat atrophied physics equipment—and so he strikes to the heart of the old philosophical problem of "vital force."

The book should serve the beginning student in Physiology by providing explanations of biochemical aspects usually not covered by his text, and most of the rest of us, who through busy and much diverted are always at heart interested in the scientific foundations of our profession, by bringing us up-to-date.

A criticism of the book would be that in his attempts to simplify matters, Parson has come dangerously near deserving to be called wordy. Perhaps he sensed this himself and makes amends in a masterful closing sentence, "But we have failed in conveying our intended meaning if the reader does not obtain more than mere scientific information from these crude and all-too-much simplified representations; unless he sees in them not only the order and economy of Nature but also some sort of expression of both the wonder and the pathos of that ceaseless cycle in which our own fleeting lives are embraced."

Arthur H Steinhaus.
Y. M. C. A. College,
Chicago, Ill.

BOOKS AND REPRINTS

of the American Physical Education Association

Address Box 362, Ann Arbor, Mich.

The recently published study "Physical Education Curriculum in Professional Schools" by the Committee on the Curriculum of the 139 Institutions preparing teachers of Physical Education in the United States is available at the regular prices, i.e., \$3.00 per copy.

The "Review," back copies to 1898: Single copies, 30c; 4 copies, \$1.00; 10 or more, per copy, 20c. One volume, bound, \$4.00 (Postage prepaid).

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Young Men's Christian Association College
Springfield, Massachusetts

GRADUATE DIVISION (*Men—Women*)

Requirements for Entrance

Christian character; Proven ability as a teacher for at least two years; Graduation from approved Bachelor's Degree course.

Students from regular Science courses ordinarily require two years.

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20 Graduate students during current year, 1929-1930.

400 men in the undergraduate department during the current year.

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